

Analysis of Digital Transformation of Financial Management in the Era of Artificial Intelligence

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Abstract. The advent of artificial intelligence has set off a climax of digital transformation for many industries. As the foundation of the operation in business, the digital transformation of financial management raises wide concerns. Therefore, this paper analyzes the literature of the last five years regarding artificial intelligence, and the application of digital technology in financial management, etc. to explore the necessity, challenges, and general path of digital transformation in financial management. The national trend and the need for enterprises to improve competitiveness prove the necessity of digital transformation of financial management. However, the weak support of awareness, technology, and human resources obstructs this process. Also, the use of digital platforms poses a high risk of data leakage. A transformation path is designed in response to these issues. The most important steps are to change concepts, establish and improve information platforms, strengthen financial personnel training, and establish data risk prevention mechanisms.

Keywords: Artificial intelligence, digital transformation, financial management.

1. Introduction

The era of artificial intelligence has arrived. Artificial intelligence is a machine with functions to simulate human behaviors and thoughts realistically based on the Internet [1]. At present, artificial intelligence has penetrated most industries, building intelligent platforms where big data and various information technologies converge, and promoting digital transformation. In the medical field, with the application of digital technologies, remote consultation, Internet hospitals, and smart medical care have been established [2]. Under such circumstances, medical resources are allocated more rationally and efficiently. Smart logistics also emerge based on digital platforms. Information technology is combined with transportation, warehousing, distribution, information services, and other links [3]. This combination realizes system perception, holistic analysis, timely processing and self-adjustment, promoting logistics service level [3]. In addition, digitalization also drives the shift to smart manufacturing. In product development, big data technology can be utilized to collect and analyze information regarding market dynamics, customers and competitors to optimize the product design [4]. In the production process, efficiency and quality can be monitored and improved through digital supply chains and automated production lines [4]. In marketing, customer relationships can be established through digital sales channels to increase market share [4]. Therefore, it can be said that industry-wide digitalization has become an inevitable trend.

The financial management is no exception. Generally speaking, financial management includes accounting, taxation, auditing, budgeting and debt management, as well as investment, financing and business decisions [1]. It sustains the day-to-day operations of the business and lays the foundation for achieving financial goals. The digitalization of financial management refers to the establishment of a financial digital system, combined with big data, cloud computing, blockchain, 5G and other information technologies, promoting the transformation from traditional accounting-based finance to intelligent digital finance supported by comprehensive management and decision-making services [5]. The digital transformation of financial management is of great significance for companies to improve their competitiveness and survive the fierce competition. However, due to some potential challenges in the transformation process, many businesses still stick to convention. This puts them at

risk of being eliminated by the era. Therefore, financial managers and enterprises should actively respond to the challenges to ensure the success of their financial management transformation.

In recent years, many scholars have done rich research and analysis on the digital transformation of financial management. Ren, He reckons that digital transformation of financial management refers to the transformation of enterprise business from offline to online, with the application of big data, cloud computing and other technologies, promoting planned reshaping of the financial management workflow [6]. Yan Ruiyang comprehensively explores the necessity, barriers and goals of digital transformation in financial management [7]. Hong Xia and others emphasize the strategy and practice of financial management digitalization [5]. They propose to promote transformation from three aspects: concepts, personnel and information systems. Luo Liuyi narrows to focus on the implementation strategy of industry and financial integration under digital transformation [8]. Based on the background of the era of artificial, this paper focuses on analyzing the challenges that may be encountered in the digital transformation of financial management and discusses the visible transformation paths with the support of current analysis in this field.

2. The Need for Transformation

2.1. The Inevitable Trend of Digital Construction

Recent years have witnessed rapid development and remarkable achievements in China's digital economy. In January 2022, the State Council issued the 14th Five-Year Plan for the Development of the Digital Economy, the document clearly expresses a strong emphasis on the digital economy as a key force in changing the global competitive landscape.

In terms of enterprise digital transformation, this document proposes to strengthen the guidance of digital thinking transformation, provide a driving force for the establishment of digital platforms, and promote the effective improvement of management capabilities [6]. The issuance of this document reflects the inevitable trend of the digital economy in China. By 2035, China's digital economy is expected to enter prosperity. A unified, fair, orderly and mature modern market system that fits in with the digital economy will be established. Under such circumstances, enterprises that cannot adapt to the digital trend will lose competitive advantage and face fierce competition and even suppression.

2.2. The Need to Improve the Efficiency of Financial Management

In the context of digital transformation, the introduction of information technologies in corporate financial management improves the efficiency of data retrieval and processing. The traditional financial management mode with backward manual methods cannot effectively cope with the explosive information.

In the data retrieval process, the application of cloud storage technology can assist in accurate data classification, reducing data search time. It also breaks through the limitations of time and space in terms of information retrieval. Financial personnel can have access to data for report output anytime and anywhere [5]. This greatly shortens the working cycle of tasks.

In data processing, with the help of high-speed computing technologies led by artificial intelligence, enterprises can improve the speed of calculation. Artificial intelligence can perform more than 3 billion calculations per second which is unprecedented [9]. The acceleration of financial data processing will activate information processing across the enterprise, improving operational efficiency.

2.3. The Need to Improve the Quality of Financial Management

Digitization drives enterprise financial management from human-intensive to automated. This trend reduces errors caused by human brain limitation and subjective judgment, improving the accuracy of data collection and calculation. Such improvement renders financial management more precise, stable and reliable.

In addition, digital transformation facilitates the application of digital anti-counterfeiting technology to prevent financial fraud. Traditional accounting and auditing have imperfect vulnerabilities, creating chances for human manipulation, such as financial statements whitewash and fictitious economic operations. According to PwC's Annual Global Economic Crime Survey, 60% of respondents in 2020 revealed that their businesses had been affected to some extent by fraud or other economic crime in the past two years [10]. Under digitization, data sources are broader and more comprehensive, improving traceability and transparency [10]. This trend effectively reduces maneuverable space. More importantly, the emergence of digital anti-counterfeiting technology ensures that financial data is immutable, traceable and encrypted [5]. One of the most popular anti-counterfeiting technologies is blockchain technology. Its principle of decentralization solves the problem of information asymmetry in financial management. At present, listed companies provide financial data to internal users and external investors as a basis for decision-making [11]. This is a form of information release centered on public companies [11]. Due to the barrier between information publishers and recipients, the latter have difficulty in determining the authenticity of data. Under the blockchain, a distributed ledger is generated [11]. Various nodes are interconnected. Transactions that occur in the company can be reviewed by supervisors at the same time [11]. This technology breaks down the barriers of information inside and outside the enterprise, greatly reducing the possibility of financial fraud.

2.4. The Need for Integration of Industry and Finance

The establishment of a digital platform in the financial department can easily connect with other business nodes of enterprises to achieve information sharing. It facilitates the integration of industry and finance. The financial department can capture business data in a timely manner and make financial planning according to it [8]. In turn, financial data can also be quickly converted into relevant information necessary for management, promoting scientific decision-making [8]. The integration of industry and finance is conducive to enterprise managers to better understand the overall strategic situation of the enterprise, quickly and accurately predict market dynamics, and identify risks and opportunities [8].

For example, at the budget stage, under the traditional financial management system, enterprise business processing usually precedes financial information processing. The disconnection of timing results in irrational budgeting. However, digital links allow real-time information interaction. The finance department can rationalize budget funds based on business conditions and objects. Strict control of unnecessary expenditures from the origin can be attained [12]. In the phase of financial analysis, financial data can be shared across business units as operational feedback. Department personnel can quickly adjust business plans, timely raise risk management according to the problems arising and grasp opportunities. The introduction of the industry-finance integration model ensures the proper and smooth functioning of enterprises, enhances the core competitiveness of enterprises, and improves the business efficiency of enterprises [13].

3. Challenges in the Transformation Path

3.1. Backward Financial Management Concepts

The notion of financial management in most enterprises is still in a relatively backward state. They mainly focus on basic accounting and are not aware of screening valuable high-preference data [5]. Such basic and standardized work can no longer add value to the company to increase competitiveness. In the context of digital transformation, the recording, calculation and accounting of financial data can realize automation. Companies should devote more time and energy to financial information analysis and decision-making for business operations.

In addition, many senior executives do not recognize the need for digital financial management, believing that technology applications only exist in high-tech industries. Or they harbor the misconception that financial management is repetitive recording with low value, thus having little

willingness to invest. As a result, in many enterprises, the construction of digital financial management platforms is unconsidered, or still rudimentary.

3.2. The Scarcity of Compound Talent

Digital financial management requires compound talents with financial knowledge, computer skills and analysis ability. However, there is currently a serious shortage of compound financial workers. Two reasons can account for this phenomenon, namely, the low educational background of financial positions and the neglect of talent transformation training by enterprises. The specific analysis is as follows.

Currently, the educational threshold for financial positions in China is relatively low. For example, in the solar energy production company, blue horizon, financial personnel with a bachelor's degree or above only account for 45% [7]. The manufacturing company, Hongda Aluminum, has only 17% of financial personnel with a bachelor's degree [7]. Most of the financial personnel with low education only possess basic accounting recording skills to complete mechanical works. they tend to have difficulties in understanding and commanding the relatively sophisticated operation of digital technologies. In addition, due to a lack of analytical thinking, they are not sensitive to the business issues behind the data. Therefore, they are less likely to provide timely and scientific advice for business decisions [7].

To adapt to the digital transformation of financial management, the most effective and practical way to compensate low qualifications of financial personnel is to provide professional training. However, the management of enterprises does not attach enough importance to financial management. It overlooks the importance of the training of financial personnel to facilitate talent transformation, which in turn impedes the transformation process of financial management [1].

3.3. The Risk of Leakage of Financial Information

Under digital transformation, the connection of enterprise information systems increases the risk of data leakage. The financial management information system enables data sharing with other business processing systems. Financial and business data are exchanged frequently, with multiple exchange paths [4]. Financial information is accessible to plenty of people in different departments. In this case, once the information system is invaded or compromised, it will lead to a large amount of data leakage. And the leakage of significant data regarding decision-making or business secrets will pose a potential threat to business survival.

4. Transformation Path

4.1. Update Concepts and Develop a Transformational Development Plan

The foundation for successful digital transformation requires a positive attitude and strong awareness.

Under digitalization, traditional accounting-based finance gradually shifts to intelligent digital finance based on management and decision-making [5]. Therefore, Enterprises should flexibly change their mindset and transform the concept of financial management to cater to the trend. Otherwise, they are faced with the risk of being eliminated.

Enterprise also needs to recognize the opportunities and benefits that artificial intelligence brings to today's world, deeply understand the function and operation of different information technologies and realize the necessity of digital transformation. In terms of concept transformation, business leaders are supposed to set positive examples for employees and shoulder the duty to be pioneers.

Enterprises should also be aware that the digital transformation of financial management is a complex and long-term process [6]. Management needs to develop comprehensive, strategic and practical plans for the construction of digital platforms, personnel training, and the implementation of risk-proof mechanisms based on business situation, combined with state policies and the information of other enterprises [13].

4.2. Establish a Financial Information System Based on Artificial Intelligence

The core of digital transformation is the construction of artificial intelligence-based digital platforms that integrate multiple information technologies. For a digital platform for financial management, two functions are extremely important, automation and information sharing. Detailed explanations are as follows.

Financial system automation should cover the entire process. In the financial budgeting stage, cloud computing technology can build mathematical models. Based on the budget of previous years, combined with current operating information, the financial budget report is automatically formed [1]. At the same time, the digital platform can record business expenses in real time, automatically match them with budgets, and provide financial timely warnings. In accounting, the installation of technology such as image recognition and speech recognition will improve the efficiency of financial information entry [1]. The digital platform can also connect with multiple online banks. RPA (Robotic process automation) technology could be utilized to automatically download bank statements and reconcile them with the company's financial information [5]. It will generate a bank balance reconciliation statement at the end of each month and send automatic email notifications [5]. Such technology can also automatically login to the tax preparation website, completing the tax return [5].

In addition, the digital financial system should establish a secure docking with the business system of relevant departments in the enterprise. By breaking down the barriers between the financial department and other departments, the enterprise will realize the development of an integrated system that enables rapid sharing of information across the enterprise, so that adapts to the new situation of business and financial integration [1].

4.3. Strengthen the Training of Compound Financial Management Talents

Based on the current situation of financial personnel qualification and composition, the most effective way to adapt financial workers to digital transformation is the development of a complete training mechanism.

In the first step, companies should develop a digital training program regarding the basic knowledge and operation of digital technologies, and the cultivation of analytical ability, forecasting ability and risk management. For grassroots employees, enterprises can provide general training like hiring university professors majoring in computer science or accounting to give lectures. For backbone employees, personalized training plans can be developed to foster senior talents who are expected to be liberated from basic accounting work and mainly assist in corporate decision-making [13].

Besides, a performance appraisal mechanism should be applied to promote training effectiveness. The digital transformation of financial management is a complex process with high requirements for financial personnel. Without motivation, employees are less likely to carry such a heavy burden spontaneously. A scientific assessment mechanism can mobilize the positivity and initiative of financial personnel [13]. Appropriate reward and punishment systems can be used in mechanisms to maintain personnel's positive attitude and reverse stubborn mindset toward digital transformation. This will ensure the desirable training outcome to some extent.

4.4. Strengthen Information Security Control and Prevent Leakage Risk

Ensuring data security is key to the digital transformation of enterprise financial management. Before the financial information platform is put into use, enterprises can take advantage of cloud computing and big data technology to establish security evaluation models and carry out risk assessments [5]. Such models will identify platform weaknesses, allowing for specific improvements to minimize the risk of data leakage. However, there still exist potential risks that cannot be predicted and eliminated beforehand. Risk monitoring technology and firewalls should be installed in financial information systems to warn and prevent internal collapse and external hacking, further ensuring the security of the data system [5]. For the security management of information systems, personnel authority should be reasonably set to prevent data from being abused by unauthorized personnel [5].

At the same time, real-time monitoring of data users will be carried out, so the responsibility for information security is assigned to specific employees [6]. In this way, the enterprise will standardize employee behavior and strengthen the accountability system.

Some smaller businesses, due to financial and technical difficulties, tend to cooperate with third-party companies to develop digital systems [6]. In addition to technical requirements, it is necessary to focus on inspecting the credit conditions and industry reliability of third-party companies [13]. Financial data security clauses should be settled according to the actual situation. It will effectively restrict third-party institutions to ensure the security of enterprise financial data.

5. Conclusion

Through the review of existing literature, this paper discusses the necessity, difficulties and general path of digital transformation of corporate financial management in the context of artificial intelligence. The requirement of national policies makes the digital transformation of financial management an inevitable trend. At the same time, in the face of fierce market competition, positive transformation is a necessary measure for the survival and growth of enterprises. With digital support, financial management efficiency and quality will be boosted. The deeper integration of industry and finance driven by digital transformation strengthens information sharing throughout the enterprise, promoting the scientific decision-making of management. However, the internal and external challenges faced by enterprises greatly hinder digital transformation. Within the enterprise, the concept of financial management is relatively rigid, with weak awareness and willingness to transform. This results in a lack of support for technology and human resources. In addition, digital system has inherent flaws, namely the low security of data and the high risk of information leakage. In order to achieve efficient and secure transformation, enterprises first need to break down the barriers of thinking, realizing the importance and inevitability of digital financial management. On this basis, enterprises should effectively cultivate personnel with compound abilities, enhance the support of financial technology systems, and build a systematic risk system.

As for limitations, this paper only provides general ideas without analysis of specific enterprises to customize the transformation path. To a certain extent, there is a lack of practicality. Future research will focus on internal research of specific enterprises and design digital transformation methods based on business type, operation, personnel composition, capital structure, etc. to help enterprises carry out smooth digital transformation.

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