Proceedings of the 9th International Conference on Economic Management and Green Development
DOI: 10.54254/2754-1169/2025.28688

A Study on the Pathways Through Which New-Quality Productive Forces Drive Financial Digital Transformation

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Abstract. As a new form of productive force characterized by high innovation and high quality, new-quality productive forces have become the core driving power behind the financial digital transformation of enterprises. This paper aims to explore the intrinsic connection between new-quality productive forces and financial digital transformation, with a focus on the specific pathways through which the former drives the latter. The study argues that the two form a virtuous cycle of mutual promotion: new-quality productive forces penetrate core business processes, accelerating digital transformation, while the success of transformation in turn fosters the optimization and upgrading of these productive forces. On this basis, the paper proposes that new-quality productive forces drive financial digital transformation mainly through three pathways: (1) refining human resources, (2) promoting technological innovation, and (3) cultivating data elements. Ultimately, through the synergistic effect of these three pathways, enterprises can establish an ecosystem deeply integrating data, technology, and talent, thereby realizing mutual reinforcement and a virtuous cycle between financial digital transformation and the development of new-quality productive forces.

Keywords: new-quality productive forces, financial digital transformation, intrinsic connection, pathway study

1. Introduction

The concept of new-quality productive forces was proposed by General Secretary Xi based on a synthesis of historical experience, the laws of economic development, and future developmental trends. It represents a modern form of productivity that transcends traditional models of economic growth. This concept not only echoes the important proposition that "science and technology are the primary productive forces," but also highlights the attributes of high innovation and high quality that China urgently needs under current economic conditions. It thus serves as a representative form of advanced productive forces in the present era. At the same time, digital transformation in the financial domain of enterprises has become an irreversible trend. Therefore, how to leverage new-quality productive forces to drive the digital transformation of financial processes—and thereby accelerate enterprises' overall transformation—has become a pressing topic worthy of in-depth exploration. This paper investigates the intrinsic connection between new-quality productive forces

DOI: 10.54254/2754-1169/2025.28688

and financial digital transformation, and on this basis, studies the pathways through which new-quality productive forces drive such transformation.

2. The intrinsic connection between new-quality productive forces and financial digital transformation

Emerging from the deep integration of science, technology, and production in the digital era, new-quality productive forces not only permeate core business processes such as manufacturing and financial management but also serve as a key driving force that accelerates enterprises' digital transformation. They continuously propel progress throughout the transformation process. Moreover, the successful implementation of digital transformation further enhances and optimizes new-quality productive forces, thereby fostering a virtuous cycle of mutual reinforcement between the two.

Financial digital transformation has become a crucial component of contemporary corporate strategy, and new-quality productive forces act as its central driving power. Enterprises are thus required to cultivate digital financial talent, effectively utilize cutting-edge digital technologies, and fully activate the driving potential of data elements to achieve a comprehensive upgrade of their financial systems. In summary, this paper identifies three key pathways through which new-quality productive forces drive the process of financial digital transformation: (1) refining human resources, (2) promoting technological innovation, and (3) incubating data elements.

3. Pathways through which new-quality productive forces drive financial digital transformation

3.1. Driving financial digital transformation through the refinement of human resources

Compared with the traditional human resource model, new-quality productive forces impose higher demands on human resource allocation in the process of digital transformation. This is reflected in two key aspects. First, with the deepening application of emerging technologies such as digitalization, intelligence, and automation, positions relying on standardized and repetitive tasks are gradually being reduced. Second, the current industrial development trend and evolving business models have created an urgent demand for professionals proficient in frontier skills such as artificial intelligence operation and big data analysis. These new positions require higher professional competencies and more complex skill sets than traditional roles [1]. Furthermore, the gap and skill barriers between emerging and traditional occupations are widening rapidly due to accelerated technological iteration. This not only intensifies the segmentation of the labor market but also places traditional, low-skill, and highly procedural roles at increasing risk of being replaced by new technologies [2]. Hence, enterprises urgently need to focus on the cultivation and application of new-quality productive forces to break through the limitations of traditional human resource models. This shift entails not only adapting to and embracing continuous technological innovation but also transforming corporate human resource strategies from cost-based advantages to innovation-driven competitiveness. Such transformation involves multiple strategic measures, including talent development, optimization of incentive mechanisms, and redesign of work processes.

This paper argues that new-quality productive forces play several key roles in refining and optimizing human resources. First, they significantly enhance enterprise operational efficiency by optimizing processes and resource allocation, thereby improving productivity. Second, by cultivating professionals proficient in digital technologies, enterprises can build highly efficient

DOI: 10.54254/2754-1169/2025.28688

human–machine collaborative systems, effectively integrating human and intelligent resources to improve work efficiency. Finally, new-quality productive forces promote the modernization of the financial team's knowledge structure and the innovation of workflow, comprehensively enhancing the overall performance and competitiveness of the financial department.

Taking the construction of a financial shared service center as an example, enterprises can utilize various frontier technologies to transform traditional financial departments with low levels of digitalization into integrated and digitalized units that combine business, finance, and strategic management functions. Routine, low-value, and easily standardized accounting tasks can be centralized and processed through shared resources to improve overall operational efficiency. The outcome is that financial personnel can focus more on complex, high-value, business-oriented, and strategic financial management tasks that yield greater returns for the enterprise. This transition, however, also raises higher requirements for financial professionals' knowledge and capabilities in management accounting and strategic financial management.

3.2. Driving financial digital transformation through the promotion of technological innovation

New-quality productive forces rely on the application of multiple cutting-edge technologies emerging from the digital transformation process, unleashing stronger momentum for enterprise development. These technologies not only significantly improve productivity but also foster the emergence and evolution of new production and business models. Given the accelerated pace of enterprise digital transformation, traditional information network infrastructures can no longer meet current technological and hardware upgrade demands. Therefore, enterprises must urgently construct or optimize new information platforms such as big data collection and analysis centers and cloud computing systems to ensure the effective implementation and successful advancement of digital transformation strategies [3]. These technologies enhance information processing efficiency and, through intelligent means, optimize decision-support systems. This greatly improves the data analysis capabilities of financial departments, increases cross-departmental collaboration flexibility, and enhances process efficiency, thereby comprehensively advancing modernization in financial management.

Based on this, the paper identifies three main ways in which new-quality productive forces drive financial digital transformation by promoting technological innovation: Building efficient data collection and analysis platforms; Facilitating the deep integration of digital technologies with financial management; Stimulating value creation through intelligent application scenarios.

By building efficient data collection and analysis platforms, enterprises can ensure the accuracy and reliability of data, achieve efficient resource integration among departments, and promote cross-departmental collaboration. The integration of data and information on production, sales, suppliers, and customers significantly enhances information transparency and communication efficiency, thereby improving decision-making speed and rationality, stabilizing interdepartmental coordination, and strengthening internal control and overall operational effectiveness. Compared with other departments, financial departments have higher demands for data. However, traditional financial shared service centers tend to focus primarily on improving financial accounting efficiency while allocating limited resources to support strategic decision-making and risk management [4]. To address this gap, enterprises should build integrated data and analysis platforms that consolidate and process data across both business and financial workflows. This provides an open, unified, and collaborative digital infrastructure that supports the financial digital transformation.

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The emerging technologies driven by new-quality productive forces also promote the deep integration and innovation between digital technologies and financial management, opening up more efficient and intelligent management pathways. For example, financial departments can deploy robotic process automation (RPA) and leverage artificial intelligence for deep learning and data analytics to realize real-time financial monitoring and risk alerts. In addition, by using big data platforms to integrate financial, sales, and other key information from subsidiaries and business units, enterprises can build comprehensive and dynamic models and forecasting scenarios. This enables a close integration between digital technology and traditional financial management, facilitating not only the identification of potential risks but also the implementation of preventive measures to ensure stable financial operations.

The data resources generated by the application of digital technologies can also stimulate the creation of more intelligent application scenarios, thereby driving enterprise value creation. These intelligent applications can generally be divided into two major categories. The first focuses on enhancing and deepening the automation of financial accounting processes—for instance, using financial robots to automate basic accounting tasks such as invoice reimbursement, report generation, and document entry, thereby improving efficiency and accuracy. The second category centers on data intelligence analysis and predictive applications. By designing key analytical indicators and developing corresponding models, enterprises can conduct in-depth analyses and accurate forecasts in areas such as budgeting and treasury management. Such measures aim to advance financial activities from a reactive and supervisory stage to a forward-looking phase characterized by planning, forecasting, and proactive control. This transition fully demonstrates the core value and function of management accounting, marking the transformation of financial functions from passive response to strategic guidance.

3.3. Driving financial digital transformation through the incubation of data elements

Data elements serve as a critical factor through which new-quality productive forces drive financial digital transformation. Data not only directly catalyzes the transformation of productive forces into new forms but also works synergistically with labor, tools, and other traditional production factors to accelerate the process of digital transformation. This mechanism highlights the decisive role of data, as a key resource, in upgrading the structure of productive forces and improving efficiency within the modern economic system. The driving mechanism of data elements is often rooted in the effective application of cutting-edge technologies, which not only significantly fosters technological innovation but also continuously stimulates advancement in high-tech fields [5].

At present, although digital technologies have been widely applied in financial digital transformation, they mainly focus on the standardization of operational processes—particularly in repetitive and monotonous tasks such as reconciliation, invoice verification, and data extraction and cleaning. However, such applications have not yet effectively extended or expanded from the financial field to the broader business and operational frontlines. In other words, the data currently used for decision-making is still largely produced under accounting standards, which often lack completeness and authenticity. The underlying reasons are twofold: on the one hand, financial departments and their personnel may have a limited understanding of the concept of financial–business integration; on the other hand, the current level of technological development still presents inherent constraints.

This paper argues that new-quality productive forces cultivate and realize the value of data elements through three key dimensions. First, by building a data connectivity system that links the entire business and financial processes, enterprises can ensure real-time and accurate information

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flow, thereby providing a reliable data foundation for decision-making. Second, enterprises should shift from a purely process-driven model to a dual-track approach that combines process-driven and data-driven strategies, using data analytics to optimize business processes and enhance both efficiency and responsiveness. Third, enterprises should activate the strategic value of data as a core production factor by deeply exploring its potential to achieve intelligent and refined upgrades in strategic decision-making and planning processes. Supported by the massive data accumulation generated by new-quality productive forces, these resources can significantly accelerate the pace of digital transformation in the financial domain, serving as a key driver in forming unified and integrated data platforms and optimizing data management processes. The goal is to establish a comprehensive business–finance data management center that ensures access to abundant, high-quality data throughout decision-making and analysis processes, thereby enabling intelligent upgrades and improved efficiency in financial management. Meanwhile, this process will foster the emergence of compound financial professionals equipped with digital thinking. Such talent will not only be adept at using digital tools but also capable of deeply understanding the complex relationship between business and finance, ultimately realizing the effective activation and maximization of data asset value. At the current stage of rapid financial digital transformation, maintaining efficient coordination between personnel and digital technologies and sustaining value maximization requires positioning data resources as the central driving force. It also calls for the deep integration of intelligent financial professionals with cutting-edge technological innovations. The ultimate goal is to build an ecosystem that integrates data-driven processes, technological empowerment, and talent innovation. Through optimized resource allocation, knowledge sharing, and skill upgrading, enterprises can enhance their capabilities in strategic decision-making, financial management, and business operations. This in turn creates a bidirectional, positive feedback loop between financial digital transformation and the development of new-quality productive forces.

4. Challenges in the transformation path

While new quality productive forces outline a clear vision and promising prospects for financial digital transformation, organizations encounter multifaceted challenges when implementing the aforementioned pathways. These obstacles are deeply rooted in organizational, technological, cultural, and external environmental dimensions. If not effectively identified and addressed, they can severely constrain the depth and breadth of the transformation, potentially leading to project failure.

4.1. Challenges in the human resource enhancement path: skill gaps and organizational change resistance

The most immediate challenge in enhancing human resources is the significant shortage and delayed cultivation of interdisciplinary digital finance talents. The requirements of new quality productive forces are disruptive, demanding that finance professionals not only master accounting, taxation, and other specialized knowledge but also acquire capabilities in data analysis, programming fundamentals, artificial intelligence applications, and business acumen. However, current educational and vocational training systems have not fully kept pace with the speed of technological iteration, resulting in a severe shortage of supply for talents who "understand finance, technology, and business" – a massive market demand. In-house cultivation is also not an overnight solution, facing dilemmas such as high training costs, long cycles, and difficulties in quantifying effectiveness. Furthermore, the transformation process triggers profound organizational change and internal resistance. Implementing financial shared service centers or applying Robotic Process

DOI: 10.54254/2754-1169/2025.28688

Automation (RPA) to replace repetitive tasks signifies a realignment of job responsibilities, reporting relationships, and even power structures. This inevitably impacts the vested interests of some employees, potentially arousing fear, resistance, or even overt opposition to change. Particularly for senior employees with weak digital skills, their sense of job security is threatened, easily forming resistance to transformation. Additionally, shifting finance personnel from traditional accounting roles to strategic partners supporting business decisions is not merely a change in job description. It necessitates a fundamental shift in corporate culture, as well as recognition and acceptance of finance's new positioning by business departments – a process fraught with challenge.

4.2. Challenges in the technological innovation application path: integration dilemmas and investment risks

A primary challenge on the technological innovation path is the integration of legacy and new systems and the breaking down of data silos. Most enterprises do not undergo digital transformation with a blank slate; their IT environments often host numerous legacy systems. These systems feature obsolete technical architectures and inconsistent data standards, creating a significant "digital divide" when integrated with emerging big data platforms, cloud computing infrastructure, and AI analytics tools. Achieving seamless integration and smooth data flow between them involves high technical complexity, implementation difficulty, and cost. Data barriers and protectionism formed over time between departments also make building a unified, efficient data collection and analysis platform an arduous task.Moreover, technological investments face the challenges of high costs and uncertain Return on Investment (ROI). Introducing advanced financial robots, AI algorithms, cloud computing services, etc., requires sustained and substantial financial investment, covering software/hardware procurement, system development, maintenance, and upgrades. For many small and medium-sized enterprises (SMEs), this expenditure is a heavy burden. More critically, the payoff period for such technological innovation projects is long, and their value is often difficult to quantify as precisely as traditional cost-cutting projects. This leads to conservatism in decision-making or budget cuts during project implementation due to the lack of immediate, tangible financial gains.

4.3. Challenges in the data element incubation path: data quality and security privacy concerns

The incubation of data, a key element of new quality productive forces, is equally challenging. The core issue lies in the absence of robust data quality and governance frameworks.Underlying problems include non-standardized data collection at the source, lack of unified data standards throughout processes, and inadequate full-lifecycle governance mechanisms. If the input is "garbage data," even the most advanced analytics platforms and intelligent algorithms will only produce "garbage insights," failing to support effective decision-making and potentially leading to misjudgments. Establishing a sound data governance system, clarifying data ownership and responsibilities, and improving data quality are foundational yet extremely arduous tasks.Another major challenge is the compliance risk associated with data security and privacy protection.Financial data is among the most core and sensitive assets of an enterprise. The construction of integrated business-finance data platforms and the analysis of internal and external data significantly increase the risks of data leakage, tampering, and misuse. With the deepening implementation of laws and regulations such as the Cybersecurity Law, Data Security Law, and Personal Information Protection Law, enterprises face increasingly stringent compliance requirements. Balancing the full utilization

DOI: 10.54254/2754-1169/2025.28688

of data's value with the construction of robust security systems, ensuring the legality and compliance of data processing activities, and managing the relationship between data utilization and privacy protection become chasms that must be bridged during digital transformation.

5. Conclusion

This study has systematically elucidated the intrinsic connection between new-quality productive forces and financial digital transformation, and detailed the three core pathways—human resource refinement, technological innovation promotion, and data element incubation—through which the former drives the latter. The research confirms that these pathways do not operate in isolation but interact synergistically to construct a new financial ecosystem characterized by data-driven processes, technological empowerment, and talent innovation. This ecosystem serves as the foundation for a virtuous cycle, where advancements in financial digital transformation, in turn, foster the further evolution and upgrading of new-quality productive forces.The theoretical significance of this paper lies in deepening the understanding of the operational mechanisms of new-quality productive forces within the specific context of enterprise financial management. It constructs an integrated analytical framework linking productive forces to digital transformation, enriching the theoretical discourse in both fields. From a practical perspective, the findings offer a clear strategic roadmap for enterprises. By focusing on the cultivation of interdisciplinary digital finance talent, the strategic integration of cutting-edge technologies, and the establishment of robust data governance systems, enterprises can navigate the complexities of transformation more effectively. The identification of challenges along each pathway also provides an early warning, enabling managers to proactively devise mitigation strategies. However, this study acknowledges certain limitations. The research primarily adopts a conceptual and theoretical analysis, and the proposed framework requires further validation through in-depth case studies and large-scale empirical testing. Furthermore, the dynamic nature of digital technologies and the varying stages of development across different industries and enterprise sizes suggest that the applicability and weighting of each pathway may differ. Future research should therefore explore the contingent factors influencing these pathways, conduct comparative studies across different contexts, and investigate the specific mechanisms of synergy and interaction among the pathways in greater detail. Such efforts will contribute to a more nuanced and actionable understanding of how to harness new-quality productive forces for successful financial digital transformation.

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