The Matthew Effect in the Digital Transformation of the Financial Sector: Performance, Mechanism, and Governance

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Abstract. This article systematically integrates the multi-scenario research of the Matthew effect in the digital transformation of the financial field and provides a review of its performance, mechanism, and governance. It not only presents the differentiation trend of efficiency, risk, and business among financial institutions, but also covers the differences in the accessibility of financial services among different groups and regions, and there are differences in scenarios such as banking, digital inclusive finance, and enterprise digital transformation. The formation of the Matthew effect is related to factors such as initial resource ownership, technological barriers, complementarity of human capital, the policy environment, and government subsidies. In light of this situation, governance measures such as differentiated supervision, strengthening technological empowerment, improving infrastructure construction, and enhancing fair supervision should be implemented. This article aims to provide a cross-scenario theoretical framework for understanding the inequality phenomenon in the digital transformation of finance and to provide a reference for policy formulation and subsequent research.

Keywords: Financial digital transformation; the Matthew effect; resource allocation; digital divide.

1. Introduction

Under the global wave of the digital economy, the digital transformation of the financial sector has become an irreversible trend. The deep integration of digital technologies, such as big data, artificial intelligence, and blockchain, with financial services is driving continuous innovation in financial service models. This transformation has not only improved financial efficiency and expanded service boundaries but also triggered a new structural problem - the "Matthew effect," in which advantageous entities continue to expand their leading position with their advantages in resources and technology, while the gap between disadvantaged and advantageous entities continues to widen. Large financial institutions are rapidly breaking through with their advantages in capital, technology, and data, while small and medium-sized institutions are lagging behind in their transformation due to resource constraints. High-income groups and urban residents are more likely to enjoy the benefits of digital finance, while low-income groups and rural residents are marginalized due to the "digital divide" [1,2]. This phenomenon of 'the rich getting richer and the poor getting poorer' not only affects the balanced development of financial markets but also poses challenges to social equity and resource allocation efficiency.

From an academic research perspective, existing studies have focused on the impact of financial digital transformation, but there are obvious limitations [3-5]. On the one hand, research often focuses on a single scenario, such as differences in digital performance in the banking industry or regional imbalances in digital inclusive finance , without conducting cross-scenario system integration [6-8]. However, the exploration of the formation mechanism is not comprehensive enough, and external factors such as government subsidies are not fully included [9]. Moreover, research on governance paths lacks specificity and operability [10].

In view of this, this study focuses on the Matthew effect in the digital transformation of the financial sector and draws the following conclusion: the essence of the Matthew effect is the "accumulated advantage of the strong" driven by resource endowment, technological barriers, and environmental factors. It not only promotes industry efficiency improvement through technology spillover but also triggers financial fairness and systemic risk issues due to intensified differentiation. Implementing differentiated policy interventions can effectively alleviate this dilemma.

This study breaks through the limitations of a single scenario and uses a unified analytical framework to reveal the cross-disciplinary transmission logic of the Matthew effect, providing a global perspective for grasping the "double-edged sword" effect of financial digital transformation; Emphasis should be placed on deepening the theoretical explanation of the fairness of transformation, clarifying the interaction mechanism between resource constraints, technological adaptation, and policy orientation, and filling the gap in the analysis of external environmental factors in existing research; Furthermore, governance approaches such as "differentiated transformation" and "precise support" are proposed, which not only consider the technological leadership role of large institutions, but also provide feasible development plans for small and medium-sized institutions and vulnerable groups. This provides a direct theoretical basis and practical reference for improving financial transformation theory, optimizing regulatory policies, and guiding the differentiated development of financial institutions.

2. The Performance and Impact of the Matthew Effect in the Digital Transformation of the Financial Sector

In the financial field, the Matthew effect runs through multiple levels of institutions, groups, and regions, resulting in complex effects.

2.1. Banking Industry

In the banking industry, there is a significant difference between large banks and small and medium-sized banks. In terms of data security, large banks invest more in digital infrastructure (such as AI models) and talent reserves, rely on data platforms to achieve global governance, build full-chain security systems, and have strong compliance capabilities. However, small and medium-sized banks often rely on third-party technology, with fragmented data, high security risks, and significant compliance cost pressures. They may even fall into the "digital paradox" owing to unexpected transformation costs [11-13].

In terms of business processes, large banks have achieved intelligent reconstruction through AI models, greatly improving their approval and service efficiency. However, small and medium-sized banks often remain at the surface level of "offline business online" transformation, with limited process optimization and significant differences in customer experience.

This differentiation directly leads to an increase in industry concentration, with some small and medium-sized banks facing the potential risk of exit. However, the technological investment of large banks has also given rise to breakthroughs such as AI big models, driving industry upgrading through "technology spillovers ".

2.2. Digital Inclusive Finance

The Matthew effect of digital Inclusive Finance is reflected in group and regional differences. Due to their high financial literacy and strong digital skills, it is easier for non-poor households to increase their income through digital payments and online credit systems. Poor households find it difficult to benefit from the "digital divide" (such as lack of equipment or weak skills), and the income gap is further widened [6,7]. In terms of urban-rural differences, the utilization rate of digital finance by urban residents is 2-3 times that of rural residents, and services such as digital credit are concentrated in cities [2]. At the regional level, the eastern and central regions cover a wide area, but the difference in the depth of use exacerbates inequality. Owing to the base effect, digital finance plays a relatively obvious role in narrowing the gap in the western region [8]. Although this differentiation has improved the service efficiency of some groups, it has exacerbated the problem of social equity, which is contrary to the goal of "common prosperity" [1].

2.3. Distribution of Government Subsidies

In the digital transformation of enterprises, the distribution of government subsidies further strengthens the Matthew effect.High digital enterprises are more likely to receive non Research and Development (R&D) subsidies and continue to benefit from "reputation accumulation". The pass rate of subsidy applications for low digital enterprises is low, and their transformation faces resource shortages. R&D subsidies show an "inverted U" differentiation; that is, moderate digital enterprises receive the most subsidies, while excessive digital enterprises reduce subsidies due to "waste of resources," but they are still higher than those of low digital enterprises [9]. Although this distribution mode has encouraged some enterprises' innovation, it has weakened market diversity, resulting in a lack of power for the transformation of low-digital enterprises [14].

3. Formation Mechanism of Matthew Effect

The formation of the Matthew effect is the result of the combined effects of resource constraints, technological barriers and environmental drivers.

3.1. Resource Constraints

Resource constraints are the core incentives. Large banks and high-tech enterprises can obtain funds at low costs through equity financing, bond issuance, and other means, while small and medium-sized institutions have limited financing channels and are unable to bear the costs of technology research and development. Simultaneously, large institutions monopolize massive customer data (such as transaction records) and high-end talent (such as Artificial Intelligence (AI) engineers), while small and medium-sized institutions face the dilemma of "data silos" and "recruitment difficulties."

3.2. Technical Barriers

Technical barriers exacerbate this differentiation. The marginal cost of technology input of large banks is low (for example, an AI model can serve tens of millions of customers). The technical standards formed in the early transformation (such as interface specifications) have become the industry threshold, and it is difficult for small- and medium-sized institutions to achieve a breakthrough [11,13]. At the group level, poor households and rural residents can only use basic functions and find it difficult to enjoy value-added services such as credit and financial management due to their lack of digital skills.

3.3. Environment Driven

The environment drives further widening of the gap. In terms of policy, government subsidies are tilted towards "digital demonstration enterprises," forming the inertia of "the strong always remain strong"; in the market, large institutions monopolize resources through network effects (such as Alipay and WeChat payment accounting for 90% of the mobile payment market), and occupy the space of small and medium-sized institutions [3]. At the ecological level, large banks and technology companies jointly build ecosystems (such as Postal Savings Bank's HarmonyOS ecosystem), while small and medium-sized institutions can only act as "followers," further exacerbating their disadvantaged position.

4. Governance Strategies for the Matthew Effect

Governance must be combined with differences in scenarios to achieve a "balanced transformation" through policy tilt and technology sharing. For the banking industry, it need to drive the implementation of "differentiated transformation." Regulatory authorities can establish a digital special fund for small and medium-sized banks, provide subsidies for technology procurement and talent training, and require large banks to open interfaces, such as risk control models [4,5]. At the

institutional level, large banks focus on ecological co-construction and export relevant technologies to small and medium-sized banks; Small and medium-sized banks are transforming and developing lightweight products such as simplified mobile banking to achieve differentiated development.

Regarding digital inclusive finance, it is necessary to narrow the 'digital divide.' Rural "digital classrooms" can be launched to enhance the skills of vulnerable groups, teach impoverished households to use online credit and e-commerce payments [1], promote aging-friendly products such as voice interaction, optimize rural 5G and network infrastructure, and reduce usage costs [2].

Enterprise subsidies should be implemented precisely. Provide "tiered subsidies" to low digital enterprises and increase the subsidy ratio in the early stages of transformation; Include "driving the transformation of small and medium-sized enterprises" in subsidy assessment and encourage large enterprises to share technology. The government can establish a digital transformation public service platform that provides affordable data governance and consulting services to reduce costs for small and medium-sized enterprises.

5. Conclusion

This study systematically explores the manifestation, formation mechanism, and governance path of the Matthew effect in the digital transformation of the financial sector and reveals the essential characteristics of "the accumulation of advantages by the strong" through cross-scenario analysis. Research has found that the Matthew effect is not an accidental phenomenon in a single field but a structural contradiction that runs through multiple scenarios, such as banking, digital inclusive finance, and enterprise subsidy distribution. In the banking industry, large banks rely on their advantages to form efficiency crushing, while small and medium-sized banks fall into the "digital paradox, and industry concentration continues to rise. In the field of digital inclusive finance, the "digital divide" between groups and the imbalance of services between regions overlap, leading to a tilt in the distribution of financial dividends towards highly educated groups and in the eastern and central regions. In the digital transformation of enterprises, the preferential allocation of government subsidies further strengthens the advantageous position of high-digital enterprises, while low-digital enterprises face the dilemma of scarce transformation resources.

From a logical perspective, the emergence of the Matthew effect is the result of the combined effects of resource constraints, technology barriers, and environmental drivers. Large institutions and highly digital enterprises establish resource barriers, create competitive barriers, and leverage policy preferences and market network effects to amplify their advantages, ultimately forming a cycle of 'the strong always remain strong'. Although this differentiation has promoted industry efficiency through technological spillovers, it has also exacerbated the lack of financial fairness and the accumulation of systemic risks, posing challenges to the balance of financial markets and the goal of common social prosperity.

In response to the above issues, this study proposes a differentiated governance framework: the banking industry needs to achieve "balanced transformation" through special funds and technology sharing, digital inclusive finance needs to rely on skills training and infrastructure optimization to narrow the "digital divide", and enterprise subsidies need to be reduced through "tiered support" and public service platforms to lower transformation costs. These measures not only respect the technological leadership role of large institutions but also provide feasible development paths for vulnerable entities and offer practical references for balancing financial efficiency and fairness.

Although this article builds a cross-scenario theoretical framework, it has limitations: insufficient empirical support (no quantitative/panel data validation), lack of international comparisons (only Chinese market, no institutional differences), and untested governance effectiveness (theoretical deductions, no case/simulation data).

Future research can be deepened in three aspects: first, constructing the "Matthew Effect Index" to quantify the differentiation intensity of different scenarios through the entropy method or principal component analysis, providing indicator tools for cross-disciplinary comparisons; second, exploring

the application of technologies such as blockchain and federated learning in data sharing to alleviate the disadvantage of small and medium-sized institutions; and third, expanding international comparative research, exploring the moderating effect of institutional environment on the Matthew effect, and providing cross-institutional references for equity governance in global financial digital transformation.

References

[1] Zhang P Q. Whether there is Matthew effect in the development of digital finance: based on the example of Baiyin City, Gansu Province. Western Finance, 2022, 12(3): 24-36.

[2] Wang H X. The income distribution effect of digital inclusive finance: Matthew effect or trickle-down effect? Guangdong Social Sciences, 2024, 16(1): 48-57.

[3] Geng Y. An analysis of the "Matthew effect" of the evolution of financial industry competition in the financial technology era. Investment And Cooperation, 2023, 12(12): 10-12.

[4] Zhao. Matthew effect may intensify: the digital transformation of the banking industry has entered the "second half". Financial Times, 2025.

[5] Xu L. How digital transformation can empower commercial bank risk management: also on the "Matthew effect" of digital empowerment. Financial Development Research, 2024, 16(10): 36-49.

[6] Sarma M. Index of financial inclusion. New Delhi: Indian Council For Research On International Economic Relations, 2008.

[7] Wang X, Zhao Y X. Is there Matthew effect in the development of digital finance? Experience comparison between poor households and non poor households. Financial Research, 2020, 25(7): 114-133.

[8] Chen M J. The impact of digital inclusive finance on urban rural income gap and its mechanism analysis: an empirical analysis based on China's provincial panel data from 2011 to 2021. E-commerce Review, 2024, 13(2): 3772-3783.

[9] Li X X, Wang Y B, Zhang S H. Analysis of the impact of enterprise digital transformation on the "Matthew effect" of government subsidies. Journal Of Jilin University Of Business And Technology, 2024, 40(1): 37-44.

[10] Chen Y G. Reflections on the "Matthew effect" of implementing inclusive finance in border and poor areas: taking Wenshan Zhuang and Miao Autonomous Prefecture in Yunnan Province as an example. Times Finance, 2015, 13(3): 291-293.

[11] Song K, Guo Y M, Xu L. Is there a "Matthew effect" in the digital transformation of banks? An empirical interpretation based on the functions of banks. China Industrial Economy, 2024, 10(12): 62-79.

[12] Xiong J, Li C W. Does the digital transformation of banks have Matthew effect: from the perspective of business performance. Contemporary Finance And Economics, 2024, 6(6): 57-70.

[13] Gómez-Bengoechea G, Jung J. The Matthew effect: evidence on firms' digitalization distributional effects. Technology In Society, 2024, 76(2): 102-104.

[14] Zheng Z P, Liu X Y, Cao Y P. Digital inclusive finance and the urban-rural income gap: Matthew or long tail effect? Economic System Reform, 2023, 3(6): 5-13.