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Digital Finance, Digital Infrastructure, and Corporate New Quality Productive Forces

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Abstract. In the context of rapid technological development and financial innovation, Digital Finance has become a key driver for enhancing Corporate New Quality Productive Forces. This study empirically examines the impact of Digital Finance on Corporate New Quality Productive Forces using financial data from A-share listed companies in China from 2011 to 2021. The results indicate that Digital Finance significantly enhances Corporate New Quality Productive Forces. Heterogeneity analysis reveals that Digital Finance has a more pronounced effect on non-state-owned enterprises and companies in the central region. Mechanism analysis shows that Digital Finance further promotes Corporate New Quality Productive Forces by reducing management costs, optimizing fixed asset allocation, and increasing patent output. Additionally, the moderation effect test results demonstrate that Digital Infrastructure significantly strengthens the positive relationship between Digital Finance and Corporate New Quality Productive Forces. These findings provide empirical evidence for advancing the development of Digital Finance and Digital Infrastructure, accelerating the formation of Corporate New Quality Productive Forces, and promoting high-quality development.

Keywords: digital finance, corporate new quality productive forces, digital infrastructure, mediation effect, moderation effect

1. Introduction

With the rapid development of information technology, Digital Finance and broadband infrastructure have gradually become key drivers of corporate productivity enhancement [1]. However, in recent years, the rapid proliferation of Digital Finance has also led to some negative phenomena in society. For instance, in certain regions, the development of digital inclusive finance has not achieved the anticipated results, instead giving rise to new issues such as increased digital credit risks and inadequate consumer protection [2]. These challenges underscore the importance of studying the interaction between Digital Finance, broadband infrastructure, and Corporate New Quality Productive Forces. Corporate New Quality Productive Forces are not only critical indicators of a company's innovation capability and sustainability but also serve as a fundamental force driving national economic transformation and high-quality development. Therefore, conducting in-depth research in this area is crucial for enhancing corporate competitiveness and fostering long-term economic growth.

This study aims to investigate the impact of Digital Finance development, broadband infrastructure levels, and Digital Infrastructure on Corporate New Quality Productive Forces. The research focuses on specific aspects of Digital Finance, such as digital credit and mobile payments, as well as broadband infrastructure coverage, internet penetration rates, and the role of Digital Infrastructure. Through empirical analysis, this study elucidates how these factors contribute to corporate productivity growth by enhancing technological innovation and management efficiency. Particularly, the study highlights that the relationship between Digital Finance and Corporate New Quality Productive Forces is significantly strengthened by the moderating role of Digital Infrastructure, underscoring its critical importance in the modern economy.

Existing research has devoted relatively little attention to Corporate New Quality Productive Forces, especially concerning the impact of Digital Finance. Thus, understanding how Digital Finance can empower Corporate New Quality Productive Forces and enhance corporate innovation and competitiveness is a central focus of this study. Furthermore, this study explores the role of Digital Infrastructure as a moderating variable, confirming its importance in amplifying the effects of Digital Finance. The practical significance of this research lies in providing a theoretical foundation for the formulation of inclusive financial policies, assisting companies in securing financial support, improving their innovation capabilities and market competitiveness, and gaining deeper insights into how information infrastructure and Digital Infrastructure can facilitate corporate digital transformation and high-quality development. The theoretical contribution of this study addresses gaps in the existing literature regarding the synergistic

effects of Digital Finance, broadband infrastructure, and Digital Infrastructure, offering systematic analysis across different types of enterprises and regions, and providing new perspectives and methodological frameworks for future research.

2. Literature Review

2.1. Digital Finance

As an important form of financial innovation, Digital Finance provides enterprises with convenient and efficient financial services through digital credit, mobile payments, and internet finance, thereby promoting technological innovation and enhancing production efficiency. However, if the development of Digital Finance is unbalanced and regulatory oversight is inadequate, it may negatively impact the production and operation of enterprises. Therefore, in-depth research on the impact of Digital Finance on Corporate New Quality Productive Forces not only helps in understanding its role in promoting high-quality development but also provides a theoretical basis for formulating more effective policies and regulatory measures [3].

2.2. Corporate New Quality Productive Forces

The concept of Corporate New Quality Productive Forces is a new approach that drives high-quality development through technological innovation, management innovation, and optimal resource allocation. Traditional productivity models, which primarily rely on capital and labor inputs, are no longer adequate to meet the rapidly changing market demands and technological advancements of today. The old productivity paradigm suffers from inefficiencies in resource utilization, severe environmental pollution, and insufficient innovation capacity, making it unsustainable for long-term corporate development. In this context, researching Corporate New Quality Productive Forces is of significant theoretical and practical importance. Corporate New Quality Productive Forces not only focus on enhancing production efficiency but also emphasize the greening, intelligentization, and optimization of the production process, which are critical for enterprises to adapt to the modern economic environment and improve market competitiveness [4]. Additionally, Liu and Ma explore the impact of Digital Finance and broadband infrastructure on Corporate New Quality Productive Forces, providing insights into how technological and management innovations can achieve optimal resource allocation and efficient utilization [5]. This research is not only crucial for guiding the long-term development of enterprises but also offers important references for policy formulation and industrial planning.

2.3. Digital Infrastructure

The construction of broadband infrastructure has provided strong support for enterprises' digitalization and information transformation, significantly enhancing Corporate New Quality Productive Forces. Existing research indicates that the digital economy, through digital innovation enablement, factor allocation optimization, and industrial transformation and upgrading, has significantly driven the development of Corporate New Quality Productive Forces [6]. However, media and experts frequently criticize the pace of Digital Infrastructure development, particularly in certain regions where inadequate Digital Infrastructure has constrained the potential relationship between Digital Finance and corporate productivity. This issue highlights the importance of Digital Infrastructure in enhancing the effectiveness of Digital Finance. In the context of "new infrastructure," the development of Digital Finance not only directly promotes regional innovation but also impacts regional innovation through both supply-side and demand-side channels [7]. Digital Infrastructure, as a new type of infrastructure, provides the necessary conditions for the development of Digital Finance, including high-speed networks, cloud computing, and big data centers, greatly enhancing the accessibility and effectiveness of Digital Finance. As Digital Infrastructure gradually improves, enterprises are able to more fully leverage Digital Finance tools, optimize resource allocation, and enhance management efficiency, thereby significantly boosting New Quality Productive Forces. This research contributes to understanding how strengthening Digital Infrastructure can better promote corporate innovation and productivity enhancement, offering valuable references for policymakers.

3. Theoretical Analysis and Research Hypotheses

3.1. Digital Finance and Corporate New Quality Productive Forces

Digital Finance, through technological means, has significantly enhanced the inclusiveness and convenience of financial services, injecting new vitality into economic and social development. It offers significant advantages in reducing transaction costs and improving capital allocation efficiency. By leveraging technologies such as mobile payments and blockchain, enterprises can obtain financial support more quickly and conveniently, thereby boosting production efficiency and innovation capacity. Corporate New Quality Productive Forces, as a crucial indicator of technological innovation and resource optimization capabilities, are directly related to a company's competitiveness and market performance. Compared to traditional productivity models, New Quality Productive Forces place greater emphasis on greening, intelligentization, and efficiency, which are key to achieving high-quality development.

Digital Finance significantly enhances Corporate New Quality Productive Forces through the following mechanisms. First, it reduces transaction costs, mitigates information asymmetry and credit risks, allowing enterprises to allocate more resources to core business activities. Second, Digital Finance optimizes resource allocation through big data and artificial intelligence, enabling companies to use capital more efficiently, especially helping small and medium-sized enterprises to overcome traditional financing constraints. Finally, Digital Finance drives technological innovation by providing more sources of innovation funding, supporting enterprises in making continuous breakthroughs at the technological frontier. Based on these mechanisms, this paper hypothesizes that Digital Finance can significantly enhance Corporate New Quality Productive Forces, specifically by reducing transaction costs, optimizing resource allocation, and promoting technological innovation. Therefore, this study proposes Hypothesis H1: Digital Finance significantly enhances firms' access to capital and alleviates financing constraints, thereby improving Corporate New Quality Productive Forces.

3.2. Digital Infrastructure, Digital Finance, and Corporate New Quality Productive Forces

In the context of today's digital economy, Digital Finance has become a crucial force in enhancing Corporate New Quality Productive Forces. However, the effectiveness of Digital Finance is often significantly influenced by digital infrastructure. Digital Infrastructure provides robust support for the implementation and application of Digital Finance by offering advanced networks, computing power, and data management technologies, thereby amplifying the positive impact of Digital Finance on Corporate New Quality Productive Forces. New infrastructure drives the innovative development of the digital economy and promotes deep integration across industry chains, providing strong momentum for the development of New Quality Productive Forces [9]. Accordingly, this study proposes Hypothesis H2: Digital Infrastructure significantly enhances the positive relationship between Digital Finance and Corporate New Quality Productive Forces. Specifically, with the support of well-developed Digital Infrastructure, Digital Finance can more effectively reduce operational costs, optimize resource allocation, and drive technological innovation, thereby significantly enhancing Corporate New Quality Productive Forces.

4. Variable Description and Model Design

4.1. Data Sources

This study utilizes panel data at the company level and prefecture-level city level for A-share listed companies in China from 2011 to 2021. The data are sourced from the CSMAR-GTA database, the Peking University Digital Inclusive Finance Index, the China Statistical Yearbook, the China Information Industry Yearbook, the China Industrial Statistical Yearbook, and official publications from provincial statistical yearbooks. The sample excludes poorly performing companies (ST and *ST), as well as companies in the financial and real estate industries. Missing values were supplemented using linear interpolation.

4.2. Model Design

To examine the relationship between Digital Finance and Corporate New Quality Productive Forces, this study constructs the regression model shown in equation (1):

$$NPro_{it} = a_0 + a_1 DFIIC_{it} + \Sigma Control_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (1)$$

In model (1), *NPro* is the dependent variable representing Corporate New Quality Productive Forces; *DFIIC* is the key independent variable representing the Digital Finance Inclusive Index; Control denotes a series of control variables; μ_i and $\lambda_t$represent the firm-fixed effects and year-fixed effects; ε is the random error term; and the subscripts *i* and *t* represent individual firms and time.

4.3. Variable Selection

Dependent Variable: This study selects Corporate New Quality Productive Forces as the dependent variable. The assessment encompasses three aspects: technological productivity, green productivity, and digital productivity, which are comprehensively calculated using indicators such as the number of patents, energy intensity, and internet penetration rate. This indicator is chosen because it comprehensively reflects a company's capabilities in innovation, resource utilization, and digital transformation, aligning with the requirements of high-quality development [10].

Key Independent Variable: To measure the development level of Digital Finance, this study introduces the Digital Financial Inclusion Index of China (DFIIC) as the key independent variable. The index is jointly published by the Digital Finance Research Center of Peking University and Ant Financial. It reflects the actual situation in China across three dimensions: coverage breadth, usage depth, and the degree of digital support services. Coverage breadth is primarily represented by the coverage rate of electronic accounts, usage depth is measured by the actual use of internet financial services such as payments, money market funds, credit,

insurance, investment, and credit scoring, while the degree of digital support services is reflected through indices of mobility, affordability, creditworthiness, and convenience [11].

Moderating Variable: In this study, Digital Infrastructure is selected as the moderating variable. As a key component of the "new infrastructure" Digital Infrastructure enhances the digitalization and informationization capabilities of enterprises by improving the coverage and quality of information and communication technology infrastructure. Digital infrastructure plays a significant role in optimizing factor allocation, promoting resource flow, and reducing transaction costs [12]. The Digital Infrastructure variable is calculated based on several indicators: long-distance optical cable line density, per capita broadband internet access ports, the proportion of employees in information transmission, computer services and software industries, per capita telecom revenue, mobile phone penetration rate, and internet penetration rate. These data are sourced from provincial yearbooks and are aggregated at the prefecture-level city level. Selecting Digital Infrastructure as the moderating variable helps to explore its role in the relationship between Digital Finance and Corporate New Quality Productive Forces.

Control Variables: Referring to existing literature, this study uses several control variables: regional GDP, registered population, the proportion of tertiary industry added value to GDP (*TIAV%*), total retail sales of consumer goods (*Consumer*), and local government general budgetary revenue (*Revenue*).

5. Empirical Results Analysis

5.1. Descriptive Statistics

The descriptive statistics reveal significant differences in the development levels of digital inclusive finance across different regions, with noticeable fluctuations in the overall development levels between regions. Corporate New Quality Productive Forces also exhibit significant variation, indicating substantial differences in new quality productivity among different enterprises. Regarding the control variables, the data on regional GDP, registered population, total retail sales of consumer goods, the added value of the tertiary industry, and local government general budgetary revenue demonstrate significant disparities in economic, population, and fiscal conditions across different regions.

Table 1. Descriptive Statistics of Variables

Variable	Mean	St.Err.	Min	Max
InNPro	1.741	0.396	0.059	3.563
DFIIC	2.321	0.757	0.213	4.346
InGDP	18.139	1.076	14.243	19.884
InPopulation	6.434	0.662	3.020	8.137
InConsumer	17.200	1.083	12.521	19.013
TIAV%	54.632	13.094	10.150	83.870
InRevenue	15.857	1.352	11.530	18.169

5.2. Baseline Regression Analysis

Table 2 presents the results of the baseline regression. Column (1) shows the direct regression results between the dependent variable and the key independent variable. Column (2) presents the results with two-way fixed effects, controlling for both individual and time effects. Column (3) displays the regression results after adding control variables, without controlling for any fixed effects. Column (4) shows the regression results with both two-way fixed effects and control variables included. The results indicate that in every regression model, the Digital Financial Inclusion Index significantly enhances Corporate New Quality Productive Forces. Specifically, if the Digital Financial Inclusion Index in a firm's region increases by one unit, the firm's Corporate New Quality Productive Forces increase by 0.082 units, thereby confirming the validity of Hypothesis H1. The development of Digital Finance improves a firm's ability to access capital and alleviates financing constraints.

Table 2. Baseline Regression Results

Variable	*NPro*			
	(1)	(2)	(3)	(4)
DFIIC	0.137 ***	0.073 **	0.145 ***	0.082 **
	(30.06)	(2.57)	(14.74)	(2.52)

Table 2. Continued

InGDP			-0.074 **	0.100 ***
			(-2.47)	(4.72)
InPopulation			0.078 **	0.117 ***
			(2.09)	(5.52)
InConsumer			-0.014	-0.093 ***
			(-0.84)	(-7.54)
TIAV%			0.001	-0.001
			(0.67)	(-1.37)
InRevenue			0.042 **	-0.042 ***
			(2.10)	(-2.96)
cons	1.422 ***	1.484 ***	1.799 ***	1.193 ***
	(134.06)	(65.89)	(5.53)	(5.71)
Year	Not Controlling	Controlling	Not Controlling	Controlling
Fe	Not Controlling	Controlling	Not Controlling	Controlling
N	28281	28281	28281	28281
Adj. R^2	0.161	0.706	0.163	0.707

Note: Numbers in parentheses represent t-statistics. The symbols "***", "**", *and* "*" denote significance levels of 1%, 5%, and 10%. This rule also applies to the table below.

6. Robustness Tests

6.1. Replacing the Dependent Variable

To verify the reliability of the above conclusions, this study replaces the dependent variable by using "Number of Patents Granted" as a substitute for "Corporate New Quality Productive Forces." The number of patents granted is a direct reflection of innovation output and can effectively represent a firm's investment and outcomes in technological research and innovation. Therefore, it can be considered an important component of Corporate New Quality Productive Forces. Column (1) of Table 3 shows that the impact of the Digital Financial Inclusion Index on the number of patents granted is significant at the 1% level, and the positive coefficient is consistent with the original model. This further confirms the positive impact of Digital Finance on corporate innovation capacity, thereby demonstrating the robustness of this study.

6.2. Replacing the Key Independent Variable

This study also replaces the key independent variable by substituting "Digital Financial Inclusion Index" with "e-commerce transaction volume" to test the robustness of the model results. The regression analysis results indicate that the coefficient of e-commerce transaction volume's impact on Corporate New Quality Productive Forces is 0.992, and it is significant at the 1% level. This suggests that e-commerce transaction volume has a strong positive effect on Corporate New Quality Productive Forces, consistent with the conclusions drawn when using the Digital Financial Inclusion Index. This further validates the robustness of Hypothesis H1.

Table 3. Robustness Check: Replacing Variables and Excluding Outliers

Variables	*NPro*			
	Replacing the Dependent Variable	Replacing the Key Independent Variable	Excluding Anomalous Years	Excluding Anomalous Cities
	(1)	(2)	(3)	(4)
DFIIC	2.148 ***		0.079 **	0.099 **
	(17.99)		(2.02)	(2.40)
E_commerce		0.992 ***		
		(3.04)		
cons	2.424 ***	1.155 ***	1.167 ***	1.814 ***
	(3.21)	(5.83)	(4.13)	(6.14)
Control Variables	Controlling	Controlling	Controlling	Controlling

Table 3. Continued

Year	Controlling	Controlling	Controlling	Controlling
Fe	Controlling	Controlling	Controlling	Controlling
N	28281	28175	21173	15131
Adj. R^2	0.851	0.708	0.695	0.685

6.3. Excluding Anomalous Years

During the sample period, the COVID-19 pandemic, starting in 2020, had a significant impact on corporate productivity. To minimize the interference of anomalous years on the research results, this study excludes data from 2020 and 2021 and conducts regression analysis. According to the regression results in Column (3) of Table 3, the Digital Financial Inclusion Index remains significantly positive at the 5% significance level, indicating that even after excluding the anomalous years affected by the pandemic, the positive impact of Digital Finance on Corporate New Quality Productive Forces persists. This reaffirms the validity of Hypothesis H1 and further strengthens the robustness of the conclusions.

6.4. Excluding Anomalous Cities

Due to their special economic status, municipalities and provincial capital cities may introduce bias into the research results. To reduce the influence of these cities, this study excludes sample firms from the four municipalities—Beijing, Shanghai, Tianjin, and Chongqing—as well as 27 provincial capital cities, and conducts regression analysis. According to the regression results in Column (4) of Table 3, the Digital Financial Inclusion Index remains significantly positive at the 1% significance level, with a coefficient of 0.099 units on Corporate New Quality Productive Forces. This indicates that even after excluding these economically unique regions, the development of Digital Finance still significantly promotes the enhancement of Corporate New Quality Productive Forces, further validating Hypothesis H1.

7. Heterogeneity Analysis

7.1. Heterogeneity in Enterprise Ownership

To further investigate the differential impact of Digital Finance on Corporate New Quality Productive Forces, this study conducts an analysis of ownership heterogeneity and regional heterogeneity. In the ownership heterogeneity analysis, we divide the sample firms into state-owned enterprises (SOEs) and non-state-owned enterprises (non-SOEs) to examine the role of Digital Finance across different ownership structures. The results in Columns (2) and (3) show that Digital Finance has a significantly positive impact on Corporate New Quality Productive Forces in non-SOEs, significant at the 1% level, indicating that Digital Finance significantly enhances productivity in non-SOEs. However, this effect is not significant for SOEs. This may be because SOEs rely less on Digital Finance channels for resource acquisition and policy support, thereby limiting the impact of Digital Finance on their productivity.

Table 4. Heterogeneity Analysis: Enterprise Ownership and Regional Heterogeneity

Variables	Enterprise Ownership			Region			
	Total Sample (1)	SOE (2)	non-SOE (3)	Eastern (4)	Central (5)	Western (6)	Northeastern (7)
DFIIC	0. 082 **	-0.123	0.115 ***	-0.033	0.265 ***	0.026	-0.122
	(2.52)	(-1.02)	(3.31)	(-0.73)	(3.08)	(0.29)	(-0.50)
cons	1.193 ***	-0.252	1.375 ***	0.410	0.122	0.871	2.822 ***
	(5.71)	(-0.38)	(5.96)	(1.08)	(0.21)	(1.42)	(3.07)
Control Variables	Controlling	Controlling	Controlling	Controlling	Controlling	Controlling	Controlling
Year	Controlling	Controlling	Controlling	Controlling	Controlling	Controlling	Controlling
Fe	Controlling	Controlling	Controlling	Controlling	Controlling	Controlling	Controlling
N	28281	2978	25303	19324	4030	3729	1198
Adj. R^2	0.707	0.794	0.709	0.714	0.728	0.687	0.659

7.2. Regional Heterogeneity of Enterprises

In the analysis of regional heterogeneity, this study divides the sample firms into eastern, central, western, and northeastern regions based on the provinces where the firms are registered, and examines the impact of Digital Finance on Corporate New Quality Productive Forces in each region. The results in Columns (4) to (7) indicate that only in the central region does Digital Finance significantly enhance Corporate New Quality Productive Forces at the 1% significance level. In contrast, the effects in the eastern, western, and northeastern regions are not significant. The significance in the central region may be related to the region's economic structural transformation and the gradual improvement of Digital Infrastructure, which have enabled Digital Finance to play a greater role in promoting productivity. In the eastern region, although the development level of Digital Finance is relatively high, its impact may be partially offset by other more mature financial services and technological innovations, resulting in less significance in enhancing Corporate New Quality Productive Forces compared to the central region. Meanwhile, the lack of significant impact in the western and northeastern regions could be due to relatively underdeveloped Digital Infrastructure and weaker technological innovation capabilities, which have limited the effectiveness of Digital Finance in boosting Corporate New Quality Productive Forces.

8. Mechanism Testing

8.1. Mediation Effect Test

To further explore the mechanisms through which Digital Finance affects Corporate New Quality Productive Forces, this study introduces management expenses, the proportion of fixed assets, and the number of patents as mediating variables to examine their mediation effects between Digital Finance and Corporate New Quality Productive Forces. First, Column (1) of Table 5 shows that management expenses play a significant mediating role between the level of Digital Finance and Corporate New Quality Productive Forces. At the 1% significance level, Digital Finance significantly reduces a firm's management expenses, indicating that Digital Finance enhances Corporate New Quality Productive Forces by lowering management costs. This result suggests that the development of Digital Finance not only improves firms' access to capital but also optimizes operational management processes through technological means, reducing redundant management expenses and allowing firms to focus more on core business development. Therefore, the role of Digital Finance in enhancing Corporate New Quality Productive Forces is further validated.

Regarding the proportion of fixed assets, Column (2) indicates that this variable also plays a significant mediating role at the 1% significance level. The results show that Digital Finance has a significant negative impact on the proportion of fixed assets, meaning that Digital Finance promotes the efficient utilization and allocation of fixed assets, thereby optimizing resource allocation and enhancing Corporate New Quality Productive Forces. This result further suggests that the development of Digital Finance helps firms to be more flexible and efficient in capital expenditure and asset allocation, reducing unnecessary fixed asset investments and allowing firms to allocate resources more effectively to innovation and market expansion, ultimately leading to productivity improvements.

Additionally, Column (3) indicates that the number of patents, as a mediating variable, is significant at the 5% level, confirming its mediation effect between Digital Finance and Corporate New Quality Productive Forces. Specifically, Digital Finance increases patent output, promoting technological innovation and thereby enhancing Corporate New Quality Productive Forces. This result demonstrates that Digital Finance is not merely a financial tool but also a critical engine driving corporate innovation. By providing convenient financing channels and supporting research and development activities, Digital Finance significantly enhances firms' innovation capabilities, giving them a greater competitive advantage in the market.

In a nutshell, the mediation effect tests in this study show that management expenses, the proportion of fixed assets, and the number of patents all play significant mediating roles between Digital Finance and Corporate New Quality Productive Forces. Digital Finance significantly enhances Corporate New Quality Productive Forces by reducing management costs, optimizing resource allocation, and promoting technological innovation. These results further validate the research hypothesis H1, indicating that the role of Digital Finance in enhancing corporate productivity is undeniable, with a multidimensional and multilayered impact mechanism that provides strong support for firms' transformation and development in the digital economy era.

Table 5. Mediation Effect Test: Reducing Transaction Costs, Optimizing Resource Allocation, Promoting Technological Innovation

Variables	Transaction Cost (1)	Resource Allocation (2)	Technological Innovation (3)
DFIIC	-0.031 *** (-5.36)	-0.031 *** (-2.61)	12.370 ** (1.97)

Table 5. Continued

cons	0.037	0.146 *	62.78
	(0.79)	(1.80)	(0.67)
Control Variables	Controlling	Controlling	Controlling
Year	Controlling	Controlling	Controlling
Fe	Controlling	Controlling	Controlling
N	27040	27711	28281
Adj. R^2	0.673	0.789	0.698

8.2. Moderation Effect Test

To verify the moderating role of Digital Infrastructure in the relationship between Digital Finance and Corporate New Quality Productive Forces, a moderation effect test was conducted. Column (1) of Table 6 shows that, after controlling for time and individual effects, Digital Infrastructure as a moderating variable significantly promotes the development of Corporate New Quality Productive Forces. In Column (2) of Table 6, the interaction term composed of Digital Infrastructure and Digital Finance (Digital * DFIIC) was further included as a moderating variable. The empirical results indicate that the interaction term's impact on Corporate New Quality Productive Forces is significant at the 1% level, demonstrating that Digital Infrastructure significantly enhances the positive effect of Digital Finance on Corporate New Quality Productive Forces. Overall, the moderation effect test results show that Digital Infrastructure not only directly influences Corporate New Quality Productive Forces but also significantly amplifies the positive effect of Digital Finance, thereby further validating the hypothesis in H2 that Digital Infrastructure significantly strengthens the positive relationship between Digital Finance and Corporate New Quality Productive Forces.

Table 6. Moderation Test: Digital Infrastructure and Interaction Term

Variables	Moderating Variable (1)	Moderating Variable & Interaction Effect (2)
DFIIC	0.072 **	0.049
	(2.19)	(1.48)
Digital	-0.072	-0.127 **
	(-1.42)	(-2.27)
Interaction		0.207 ***
		(3.45)
cons	1.098 ***	1.079 ***
	(5.14)	(5.07)
Control Variables	Controlling	Controlling
Year	Controlling	Controlling
Fe	Controlling	Controlling
N	27740	27740
Adj. R^2	0.708	0.708

9. Conclusion and Policy Recommendations

9.1. Research Conclusions

This study empirically analyzed the impact of Digital Finance on Corporate New Quality Productive Forces and explored the moderating role of Digital Infrastructure in this relationship. The results show that Digital Finance significantly enhances Corporate New Quality Productive Forces, with particularly strong effects observed in non-state-owned enterprises and firms located in central regions. Additionally, mediation effect tests revealed that management expenses, the proportion of fixed assets, and the number of patents play crucial mediating roles between Digital Finance and Corporate New Quality Productive Forces. This indicates that Digital Finance not only directly supports firms financially but also optimizes resource allocation and drives technological innovation, further boosting Corporate New Quality Productive Forces. The moderation effect test results further demonstrate that Digital Infrastructure significantly amplifies the positive impact of Digital Finance on Corporate New Quality Productive Forces, validating the hypothesis that Digital Infrastructure significantly strengthens the positive relationship between Digital Finance and Corporate New Quality Productive Forces.

9.2. Policy Recommendations

Based on the above research conclusions, the following policy recommendations are proposed:

First, it is recommended that regional governments continue to vigorously promote the development of Digital Infrastructure to enhance the impact of Digital Finance on Corporate New Quality Productive Forces. Governments should accelerate the construction of new infrastructure, such as 5G networks, artificial intelligence, and big data centers, especially in the central and western regions where Digital Infrastructure is relatively weak, to further enhance the digitalization and productivity of enterprises in these areas.

Second, enterprises should actively utilize Digital Finance tools to optimize resource allocation and drive technological innovation. Firms should increase their use of Digital Finance tools, particularly in managing expenses and allocating fixed assets, to improve operational efficiency and innovation capacity. Additionally, enterprises are encouraged to leverage the support of Digital Finance to increase investment in research and development, thereby boosting patent output and enhancing their Corporate New Quality Productive Forces.

Third, governments and policymakers should encourage the digital transformation of enterprises, especially among non-state-owned firms, to better utilize the synergy between Digital Finance and Digital Infrastructure and promote a comprehensive improvement in Corporate New Quality Productive Forces. It is recommended to introduce corresponding policies and incentives to support firms in achieving high-quality development with the help of Digital Finance and Digital Infrastructure, driving overall economic innovation and upgrading.

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