The Research on the Impact of Digital Transformation on Corporate Financialization - Evidence from China

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Abstract: As market entities, enterprises enhance the storage, transmission and analysis of data through digital transformation, leading to significant changes in their production efficiency and business models. On the other hand, in the context of increasingly fierce market competition, to alleviate the profit reduction caused by the decline in the returns of the real economy, the financialization of enterprises has become a common phenomenon. How to reduce the financialization of enterprises has become a topic of high social concern. This paper empirically examines the impact of digital transformation on the financialization of enterprises using non-financial listed companies on the Shanghai and Shenzhen A-share markets in China from 2013 to 2023 as the research sample. The study finds that digital transformation inhibits the financialization of enterprises. Digital transformation inhibits the financialization of enterprises by reducing operational risks. This research provides new evidence for reducing the financialization of enterprises.

Keywords: Digital Transformation; Corporate Financialization; Business Risks

1. Introduction

Through digital transformation for digital technological innovation, enterprises promote the digital industrialization and industrial digitalization transformation, which is an important measure to adapt to the development of the times and enhance market competitiveness. Against this backdrop, this paper empirically examines the relationship between digital transformation and enterprise financialization by taking non-financial listed companies on the Shanghai and Shenzhen A-share markets in China from 2013 to 2023 as the research sample.

2. Literature Review

2.1 Research on Digital Transformation

In recent years, the microeconomic consequences of digital transformation in enterprises have become a hot topic of interest among many scholars. Digital transformation can enhance corporate governance (Qi et al., 2020)[1], lead to better ESG performance (Ding et al., 2024)[2], increase R&D investment and technological innovation in enterprises (Duan, Yang, & Dong, 2023; Wang & Yao, 2023) [3-4], improve employee benefits (Huang, 2024)[5], and ultimately enhance performance and enterprise value (Huang, Xie, Meng, et al., 2021; Yi, Wu, & Xu, 2021)[6-7].

2.2 Research on Corporate Financialization

Academics believe that there are two motives for firms to allocate financial assets: "precautionary savings" and "profit-chasing". The "precautionary savings" motive believes that the purpose of allocating financial assets is to reserve funds, and when enterprises have idle funds, they can allocate financial assets to obtain additional income, and when facing a shortage of funds, enterprises can quickly sell financial assets to alleviate financial pressure. The "profit chasing" motive believes that due to the profitability of financial assets, enterprises allocate financial assets in order to obtain financial channel benefits. However, excessive returns from financial channels may make enterprises dependent on financial assets, which will eventually lead to a decline in corporate investment.(Orhangazi, 2008; Demir, 2009)[8-9]

3. Theoretical Analysis and Research Hypothesis

3.1 Digital Transformation and Corporate Financialization

On the one hand, digital transformation will open up the internal enterprise and deeply

integrate production, management, marketing and other departments to form an organic unity, making the generation, transmission and sharing of data and information in different departments more convenient and efficient, and strengthening internal communication within the organization. The organizational structure is flattened, the organizational hierarchy is reduced, and the management decision-making is accelerated, which is conducive to cross-departmental and cross-regional collaborative work. Through the digital management of the supply chain and customers, the operational efficiency of the enterprise is improved. On the other hand, digital transformation accelerates the flow of market information and helps enterprises to study and judge the market. Enterprises use big data and other technologies to analyze market demand and customer preferences, adjust production strategies in a timely manner through market feedback and user evaluation, and produce differentiated products to meet different customer needs. Through changes in market demand, the production quantity is adjusted in time to reduce production costs and inventory costs.

With the application of digital technologies such as big data, artificial intelligence, and cloud computing, digital transformation enterprises have improved their data collection and processing capabilities, strengthened their ability to mine and analyze the market and rapid strategic change, and improved their core competitiveness and dynamic capabilities.

Hypothesis H1: Digital transformation will inhibit corporate financialization.

3.2 Discussion on the Path of Business Risk Affecting the Corporate Financialization

With the help of digital technology, enterprises can collect and process a large amount of market-related data, analyze and judge market trends, customer preferences and other information, and predict potential market risks in advance. After the product is put into the market, it can also adjust the production and operation strategy and business model in a timely manner according to sales data, customer feedback, etc., and adjust and optimize inventory management. Through the analysis and judgment of data, managers will have a deep grasp of the market situation, adjust the business strategy in time, and greatly reduce the business risk. Reduced operational risk means that companies can continue to stabilize their production operations and bring more and more stable revenue by building long-term relationships with customers. The improvement of performance will enhance the willingness and motivation of the development of the real industry of enterprises, and ultimately inhibit the financialization of enterprises, so this paper puts forward the following hypotheses:

Hypothesis H2: Digital transformation reduces the operational risks faced by enterprises, and ultimately inhibits the financialization of enterprises.

4. Research Design

4.1 Sample Selection and Data Source

This paper takes the data of China's A-share listed companies in Shanghai and Shenzhen from 2013 to 2023 as the initial sample, and adopts the following measures to screen: (1) exclude the sample of the financial industry. (2) Eliminate the sample of enterprises with abnormal operations such as ST. (3) Eliminate samples with abnormal and missing data of key variables. (4) All continuous variables were subjected to 1% tail reduction. The data related to digital transformation in this paper are obtained from the annual reports of listed companies, and the rest of the data are obtained from the database CSMAR and the platform CNRDS.

4.2 Variable Selection and Definition

4.2.1 Explained variable

Drawing on existing literature (Xu Zhiyong et al., 2022; Shi Xiangyan et al., 2023) [10-11], the ratio of financial assets to total assets is used to measure the level of corporate financialization, including trading financial assets, investment real estate, long-term equity investment, bond investment, other bond investment, other equity instrument investment, and other illiquid financial assets.

4.2.2 Explanatory variable

This paper draws on the method of Wu Fei et al. (2021)[12] to measure the level of digital transformation in enterprise annual reports. The specific processing process is as follows: first, obtain the annual report documents of A-share listed companies from 2013 to 2023 from the Internet. Second, convert the annual

report document into text data. Finally, the pandas module and jieba word segmentation module in Python are used to process data and count word frequency according to the characteristic word frequency of digital transformation.

4.2.3 Intermediate variable

Drawing on the research of Ying He et al. (2019)[13], the volatility of earnings is used to measure the operational risk faced by enterprises, first taking the ROA of the return on assets of the enterprise minus the annual industry average value to the Adj_ROA, and then using every three years as an observation period, the standard deviation of the industry-adjusted Adj_ROA is calculated on a rolling basis, and the larger the value, the greater the operational risk. The specific calculation formula is as follows, EBIT represents earnings before interest and taxes, and Asset represents the total assets of the enterprise:

$$\text{Adj\_ROA}_{i,t}=\frac{\text{EBIT}_{i,t}}{\text{Asset}_{i,t}}-\frac{1}{X}\sum_{k=1}^{X}\frac{\text{EBIT}_{i.t}}{\text{Asset}_{i,t}} \quad (1)$$

$$\text{Risk}_{i,t}=\sqrt{\frac{1}{T-1}\sum_{t=1}^{T}(\text{Adj\_ROA}_{i,t}-\frac{1}{T}\sum_{t=1}^{T}\text{Adj\_ROA}_{i,t})^2|T=3} \quad (2)$$

4.2.4 Control variable

The following control variables are used: enterprise size (Size), which is measured by the total assets of the enterprise; financial leverage (Lev), as measured by the debt-to-asset ratio; profitability (ROA), as measured by return on assets; Indirectors: If the chairman and the general manager are the same person, 1 will be taken, otherwise 0; Age of the enterprise (Age); The company's growth is measured by the growth rate of main business revenue; Net operating cash flow (NCF), as measured by net cash flow at the end of the period divided by total assets at the end of the period; Shareholding ratio of major shareholders (Top3).

4.3 Model Construction

In order to test hypothesis H1 and explore the relationship between digital transformation and enterprise financialization, this paper adopts the following model based on the existing literature:

$$\text{Fin}_{i,t}=\alpha_0+\alpha_1\text{Digital}_{i,t}+\alpha_j\text{Controls}_{i,t}+\sum\text{Year}+\sum\text{Industry}+\varepsilon_{i,t} \quad (3)$$

In order to test hypothesis H2 and explore whether digital transformation can reduce the level of corporate financialization by reducing business risks, the following mediating effect model is adopted:

$$\text{Risk}_{i,t}=\beta_0+\beta_1\text{Digital}_{i,t}+\beta_j\text{Controls}_{i,t}+\sum\text{Year}+\sum\text{Industry}+\theta_{i,t} \quad (4)$$

$$\text{Fin}_{i,t}=\gamma_0+\gamma_1\text{Risk}_{i,t}+\gamma_2\text{Digital}_{i,t}+\gamma_j\text{Controls}_{i,t}+\sum\text{Year}+\sum\text{Industry}+\sigma_{i,t} \quad (5)$$

5 Empirical Analysis

5.1 Descriptive Statistics

Table 1. Descriptive Statistics

Variable	N	Mean	SD	Min	Max
Digital	17,900	2.394	1.209	0	5.037
Fin	17,900	0.0762	0.106	0	0.518
Risk	17,900	0.0348	0.0475	0.000885	0.256
Indirectors	17,900	38.51	9.918	0	63.64
ROA	17,900	0.035	0.069	-0.277	0.197
Age	17,900	20.25	6.068	4	67
Lev	17,900	0.412	0.198	0.0503	0.940
Dual	17,900	0.306	0.461	0	1
Growth	17,900	0.176	0.533	-0.917	4.519
Top3	17,900	0.475	0.154	0.162	0.870
NCF	17,900	0.0477	0.0677	-0.182	0.246
Size	17,900	22.34	1.318	19.77	27.26

Table 1 shows the descriptive statistical results for the main variables. As shown in the table, the mean value of digital transformation is 2.394, the standard deviation is 1.209, the minimum value is 0, and the maximum value is 5.037, indicating that most listed companies have begun to carry out digital transformation, but the difference in digital transformation is large, and it is worth noting that there are still many listed companies that have not taken

strategic measures for digital transformation. The mean value of corporate financialization is 0.0762, the standard deviation is 0.106, the minimum value is 0, and the maximum value is 0.518, indicating that there are indeed many enterprises that have changed their investment direction to financial assets, and even some enterprises' financial assets account for more than 50%, but there are also enterprises specializing in real industries and there is no phenomenon of corporate financialization.

5.2 Correlation Analysis

Table 2. Correlation Analysis

	Fin	Digital	ROA	Size	Lev	Age	Growth	Dual	Indirectors	Top3	NCF
Fin	1										
Digital	-0.1418***	1									
ROA	0.0576***	-0.0520***	1								
Size	-0.1000***	-0.0037	0.0623***	1							
Lev	-0.2271***	-0.0250***	-0.3192***	0.4904***	1						
Age	0.0922***	-0.0846***	-0.0755***	0.1970***	0.1653***	1					
Growth	-0.0518***	0.0277***	0.2034***	0.0592***	0.0282***	-0.0685***	1				
Dual	0.0359***	0.0651***	0.0101	-0.1883***	-0.1340***	-0.1212***	0.0230***	1			
Indirectors	0.0265***	0.0012	0.0438***	-0.0357***	-0.0349***	-0.0462***	-0.0129*	-0.0105	1		
Top3	0.0124*	-0.1129***	0.2103***	0.1646***	-0.01	-0.1026***	0.0356***	-0.009	0.0147**	1	
NCF	0.0360***	-0.0683***	0.4179***	0.0873***	-0.1512***	-0.0182**	0.0432***	-0.0106	0.0290***	0.1474***	1
*** p<0.01, ** p<0.05, * p<0.1											

Table 2 shows the correlation coefficient matrix for the main variables. As shown in the table, the correlation coefficient between enterprise financialization and digital transformation is -0.1418 and is significant at the 1% level, which preliminarily indicates that digital transformation may have an inhibiting effect on enterprise financialization.

5.3 Regression Analysis

5.3.1 Fundamental regression

In order to verify hypothesis H1, model (1) is used for regression analysis, and the results are shown in Table 3. The coefficient between digital transformation and enterprise financialization is -0.0059 and is significant at the 1% level, indicating that there is an inhibition effect between digital transformation and enterprise financialization. Suppose H1 is proven.

Table 3. Digital Transformation and Corporate Financialization

	(1)
Variable	Fin
Digital	-0.0059***
	(-6.3243)
ROA	-0.0002**
	(-2.1067)
Size	-0.0001***
	(-4.5880)
Lev	-0.0537***
	(-8.7137)
Age	-0.0075***
	(-4.4802)
Growth	-0.0033***
	(-3.1574)
Dual	0.0013
	(0.7515)
Indirectors	-0.0002***
	(-2.5870)
Top3	-0.0624***
	(-6.2996)
NCF	0.0061
	(0.6237)
Year	Control
Industry	Control
_cons	0.3309***
	(8.4811)
N	17 900

t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5.3.2 Mechanism test

In order to test hypothesis H2 and explore whether digital transformation inhibits corporate financialization by reducing business risks, this paper conducts regression analysis by model (2) and model (3), and the regression results are shown in Table 4.

Table 4. Mediating Effect of Business Risk

	(1)	(2)
Variable	Risk	Fin
Digital	-0.0008*	-0.0059***
	(-1.6859)	(-6.2895)
Risk		0.0388**
		(2.4799)
ROA	-0.0027***	-0.0001
	(-47.6456)	(-1.0273)

Size	-0.0001***	-0.0001***
	(-5.3875)	(-4.4712)
Lev	0.0164***	-0.0544***
	(4.9355)	(-8.8111)
Age	-0.0032***	-0.0073***
	(-3.6043)	(-4.4033)
Growth	0.0009	-0.0033***
	(1.5663)	(-3.1906)
Dual	-0.0012	0.0014
	(-1.2648)	(0.7781)
Indirectors	-0.0001	-0.0001
	(-1.5625)	(-1.3110)
Top3	-0.0497***	-0.0605***
	(-9.2865)	(-6.0872)
NCF	0.0436***	0.0044
Year	Control	Control
Industry	Control	Control
_cons	0.1424***	0.3254***
	(6.7557)	(8.3273)
N	17 900	17 900

t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Column (1) represents the impact of digital transformation on business risk, and the coefficient of digital transformation on business risk is -0.0008 and is significant at the 10% level, indicating that enterprise digital transformation can reduce the business risk faced. In column (2), the regression analysis shows that the coefficient of digital transformation on enterprise financialization is -0.0059 and is significant at the level of 1%, and digital transformation can significantly inhibit enterprise financialization. The coefficient of business risk to corporate financialization is 0.0388 and is significant at the 5% level, indicating that when business risk decreases, corporate financialization also decreases. In summary, digital transformation significantly reduces the operational risk of enterprises, and the reduction of operational risk significantly inhibits the financialization of enterprises, and the hypothesis H2 is verified.

6. Research Conclusion

This paper selects China's A-share non-financial listed companies from 2013 to 2023 as a sample to explore the impact of digital transformation on corporate financialization through empirical research methods. The results show that: First, digital transformation can significantly inhibit the financialization of enterprises. Second, in terms of the role of inhibiting the financialization of enterprises, digital transformation can reduce the operational risks faced by enterprises, thereby improving the operating conditions of enterprises, and ultimately inhibiting the financialization of enterprises.

7. Research Deficiency and Prospect

Limited by the author's professional knowledge and personal ability, this study has some shortcomings. The following is the explanation of the limitations of this paper and the prospect of future research:

First, in terms of the selection of indicators for digital transformation, the current mainstream method is to measure the digital transformation of enterprises by statistically statistically measuring the frequency of digital transformation-related words in enterprise annual reports. The negative impact is that, on the one hand, the disclosure of an enterprise's annual report is not a direct measurement of the level of digital transformation, which may cause measurement errors. On the other hand, digital transformation disclosure is also affected by the willingness of enterprises to disclose, and there will be excessive disclosure.

Second, digital transformation, as a strategic means rather than a way of enterprise management, has not yet produced new theories, and it still mainly relies on traditional general theories such as information asymmetry theory and principal-agent theory.

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