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An Empirical Study of Corporate Digital Transformation on Innovation Performance

Zhang Yuan, Chen Shan*

School of Economics and Management, Shaanxi University of Science and Technology, Xi'an, 710021, China
**Corresponding author: chenshan333519@163.com*

Abstract: *With the rapid development of digital-intelligent economy, digital transformation has become an important factor affecting corporate innovation. This paper selects A-share listed companies from 2012 to 2021 as a sample to study the impact of digital transformation on innovation performance based on financial flexibility perspective. The results show that there is an inverted U-shaped relationship between digital transformation and innovation performance, and financial flexibility can weaken this relationship, and the inverted U-shaped relationship still holds after the robustness test. Further research finds that there is a positive relationship between digital transformation and innovation performance in state-owned enterprises, and an inverted U-shaped relationship between digital transformation and innovation performance in non-state-owned enterprises, and the inverted U-shaped curve is steeper in large-scale enterprises than in small-scale enterprises. The findings of this paper enrich the research on enterprise innovation and provide practical insights for enterprises to improve innovation performance from the perspective of digital transformation.*

Keywords: *digital transformation, financial flexibility, innovation performance, inverted U-shaped relationship*

1. Introduction

With the continuous promotion and application of digital technology, all industries are promoting digital transformation, accelerating the optimisation and restructuring of production factors, and exploring new development paths. Innovation as the first power to lead development is crucial for enterprises to grasp the initiative to improve their core competitiveness, and the development of digital technology can help stimulate the innovation vitality of enterprises and promote R&D investment [1]. In the era of rapid change of information technology, how enterprises use digital technology to build development strategies and promote innovation performance is an important issue in the current development stage. Current scholars have made great progress in the study of digital transformation, but there are relatively few studies exploring digital transformation and innovation performance, and scholars are inconsistent, one believes that digital transformation can reduce operating costs, accelerate the operation of resources, alleviate the pressure of innovation financing, and help to improve the innovation performance [2], and one believes that with the growth of the degree of digital transformation, the innovation performance shows an increasing and then decreasing trend [3]. Enterprises to promote digital transformation need to consume a lot of resources [4], financial flexibility as a long-term mechanism of financial resource allocation, can promote the efficient allocation of innovation resources [5], thus affecting innovation activities. So how does digital transformation affect corporate innovation performance? And what role does financial flexibility play in it? This paper takes A-share listed companies in 2012-2021 as a sample, introduces financial flexibility, and conducts empirical research on the relationship between digital transformation and corporate innovation performance.

2. Theoretical Analysis and Research Hypotheses

2.1. Digital Transformation and Innovation Performance

The development of digital technology provides a huge space and development platform for enterprise innovation, and enterprises can use digital technology to acquire, process and analyse massive data more efficiently, enhance the enterprise's ability to capture external information, optimize resource

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allocation, and thus make scientific decisions, which provides a more complete information base for innovation. Digital transformation can break the original knowledge structure, stimulate enterprises to continuously explore novel core technologies [6], and help enterprises accumulate resources. To achieve the growth of innovation performance, enterprises will take the initiative to find a favourable time for product upgrading, service upgrading, and brand benefit growth, and at this time, the technical support provided by digital transformation can reduce the cost of production and operation of the enterprise, improve the efficiency of innovation capital investment, and help to improve innovation performance.

According to the law of diminishing margins, with the continuous investment of digital elements, the unit investment utility decreases. Moderate digital transformation has a positive effect on innovation performance, but excessive digital transformation of enterprises will produce resource crowding of innovation activities, resulting in the escalation of the coordination costs of enterprises and stakeholders, resulting in enterprises reducing the investment in innovation activities and reducing the efficiency of resource allocation [7]. Excessive application of digital technology faced with a large amount of information will distract the enterprise's efforts, from the micro level, may lead to internal diseconomies of scale, so that the enterprise is in a high-risk state, digital technology and resources are difficult to form an effective match. Excessive consumption of cash flow for digital transformation will lead to the inability of enterprises to form a positive supply of funds, exposing them to operational risks and financial difficulties.

In summary, digital transformation has a facilitating effect on innovation performance to a certain extent, and an inhibiting effect after exceeding the critical value. Based on this, hypothesis H1 is proposed: digital transformation has an inverted U-shaped effect on innovation performance.

2.2. Analysis of the Regulating Role of Financial Flexibility

In order to prevent the development crisis caused by various uncertainties, managers usually reserve more liquidity to enhance resilience, and this flexibility to cope with uncertainty is reflected in the financial flexibility of enterprises [8]. According to the resource base theory, the enterprise reserves financial flexibility, that is, retaining sufficient disposable cash and debt raising capacity, is conducive to the enterprise's flexible response to market risks. Innovation, as an important way of enterprise development, requires a large amount of financial support, but due to the long cycle of innovation activities and high uncertainty, the demand for funds is high, and if the supply cannot be sustained for a long period of time, it may lead to the interruption of the project, which affects the innovation output and performance. Enterprises need to maintain a moderate degree of financial flexibility to increase their risk-bearing capacity and invest reasonable resources to provide support for innovation activities, thus ensuring the continuity of their innovation activities and improving their competitive advantages in the changing market environment. Therefore, the financial flexibility of enterprises will have a certain impact on innovation performance.

Financial flexibility improves the ability of enterprises to cope with high competitive environment [9], but in the face of market uncertainty, enterprises reserve high financial flexibility, while reducing external financing costs, will also increase the company's cost of capital holding and opportunity cost, and lose the company's external governance function [7]. It can be seen that enterprises reserve a high level of financial flexibility to take a conservative strategy is not conducive to the normal and sustainable digital transformation, the release of financial flexibility can accelerate the process of digital transformation, to help enterprises reduce the cost of innovation, to grasp the investment opportunities. Financial flexibility can optimize the operation of enterprise funds, in-depth exploration of the potential of digital technology [10], reserve too much financial flexibility, the enterprise's resource allocation will appear unbalanced phenomenon, resulting in the lack of investment in other projects, the lack of investment in digital transformation, at the same time will lead to the availability of fewer remaining resources, resulting in insufficient investment in innovation, thus weakening the impact of digital transformation on innovation performance, limiting its development potential.

Based on this, hypothesis H2 is proposed: financial flexibility can weaken the inverted U-shaped relationship between digital transformation and innovation performance.

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3. Research Design

3.1. Sample Selection and Data Source

A-share listed companies from 2012 to 2021 were selected as the research samples, and the required financial data were obtained from the Cathay Pacific database (CSMAR) and patent data from the China Research Data Service Platform database (CNRDS). The following treatments were carried out: (1) exclude ST and *ST samples; (2) exclude financial industries; and (3) exclude samples with missing data. Finally, 21,589 observations were obtained, and in order to eliminate the influence of extreme values, all continuous variables were subjected to the upper and lower 1% shrinkage treatment. EXCEL and STATA16.0 software were used to process and study the data.

3.2. Definition of Variables

3.2.1. Dependent Variable

Innovation performance (pat). From the perspective of innovation output, innovation performance is measured by the number of patent applications of enterprises. In the process of data processing, since the number of patent applications of some enterprises is 0, in order to prevent these samples from being discarded, the logarithm of the number of patent applications is taken as a measure of innovation performance after adding one.

3.2.2. Independent Variable

Digital transformation (dt1). Drawing on the text analysis method of Wu Fei et al. (2021) [11] to measure digital transformation, capture the keywords of digital transformation in the annual reports of listed companies, specifically the five dimensions of artificial intelligence, big data, cloud computing, blockchain, and digital technology, and take the logarithm of the number of keyword word frequencies by adding one to obtain the digital transformation index, dt1. In the robustness test, the measurement method of Zhao Chenyu et al. (2021) [12] is used to obtain the keywords of digital technology application in annual reports of listed companies, take the logarithm of word frequency and add one to calculate the digital transformation index dt2.

3.2.3. Moderating Variables

Financial Flexibility (ff1). Drawing on the multi-indicator approach of Aimin Zeng et al. (2010) [13], the sum of cash flexibility and liability flexibility is used to represent financial flexibility.

3.2.4. Control Variables

Table 1: List of variable definitions.

Variable name	Variable symbol	Description of variables
Innovation performance	pat	Ln (number of patent applications + 1)
Degree of digital transformation1	dt1	Reference to Wu Fei (2021) approach
Degree of digital transformation2	dt2	Refer to Chenyu Zhao (2021) practice
Financial flexibility	ff1	Asset flexibility + liability flexibility
Asset-liability ratio	tdr	Total liabilities/total assets
Return on total assets	roa	Net profit/total assets
Return on net assets	roe	Net profit/net assets
Cash flow	cash	Net cash flows from operating activities/total assets
Fixed asset level	fa	Ln (net fixed assets/number of employees)
Enterprise growth	grow	Growth rate of revenue
Enterprise size	size	Ln (total assets + 1)
Shareholding of the largest shareholder	top1	Shareholding ratio of the largest shareholder
Enterprise value	tobinq	Tobin Q
Director and supervisor shareholding ratio	djg	Shares held by directors and supervisors/total shares
Two jobs in one	dual	Chairman and Managing Director at the same time

Drawing on previous research on innovation performance by scholars [2]-[14], and considering the factors that may affect the innovation of enterprises, asset-liability ratio (tdr), return on total assets (roa),

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return on net assets (roe), cash flow (cash), fixed asset level (fa), enterprise growth (grow), enterprise size (size), shareholding of the largest shareholder (topo1), enterprise value (tobinq), director and supervisor shareholding ratio (djg), and two jobs in one (dual) as control variables, as shown in Table 1.

3.3. Model Construction

In order to empirically test the inverted U-shaped relationship between digital transformation and innovation performance, the curvilinear regression model (1) is constructed according to hypothesis H1, and the inverted U-shaped relationship is tested by drawing on the three-step method proposed by Lind (2010) [15]. If the inverted U-shaped relationship exists, three conditions should be met: Condition 1, the coefficient of dt1 is significantly positive, and the coefficient of $dt1^2$ is significantly negative; Condition 2, the slopes of the inverted U-shaped curves should be sufficiently steep at the minimum and maximum values of digital transformation; Condition 3, the inflection point of the curves is in the range of the values of digital transformation when the innovation performance takes the maximum value.

$$pat = \beta_0 + \beta_1 dt1 + \beta_2 dt1^2 + \beta_3 tdr + \beta_4 roa + \beta_5 roe + \beta_6 cash + \beta_7 fa + \beta_8 grow + \beta_9 size + \beta_{10} top1 + \beta_{11} tobinq + \beta_{12} djg + \beta_{13} dual + \varepsilon_t \quad (1)$$

In order to verify the existence of the moderating effect of financial flexibility on digital transformation and innovation performance, according to hypothesis H2, digital transformation and its squared term are added to the interaction terms dt1×ff1 and $dt1^2$×ff1 with the moderating variables on the basis of the curvilinear regression model (1).According to the curvilinear moderating effect test method proposed by Lin Weipeng et al. (2022) [16], the regression results focus on the significance and positive or negative sign of the coefficient of dt1×ff1 vs. $dt1^2$×ff1 coefficients' significance and positive or negative sign, the quadratic interaction term $dt1^2$×ff1 coefficient is significant then it has a moderating effect, if the coefficients of $dt1^2$ and $dt1^2$×ff1 have the same sign and are significant, then financial flexibility enhances the relationship between digital transformation and innovation performance, and the inverted U-shape curve becomes steeper; if the coefficients of $dt1^2$ and $dt1^2$×ff1 are different sign and are significant, then financial flexibility weakens the relationship between digital transformation and innovation performance, and the inverted U-shaped curve becomes flat.

$$pat = \beta_0 + \beta_1 dt1 + \beta_2 dt1^2 + \beta_3 dt1\times ff1 + \beta_4 dt1^2\times ff1 + \beta_5 ff1 + \beta_6 tdr + \beta_7 roa + \beta_8 roe + \beta_9 cash + \beta_{10} fa + \beta_{11} grow + \beta_{12} size + \beta_{13} top1 + \beta_{14} tobinq + \beta_{15} djg + \beta_{16} dual + \varepsilon_t \quad (2)$$

4. Empirical Analysis

4.1. Analysis of Regression Results

The variance inflation factor (VIF) was applied to test for multicollinearity for the full sample used. All VIF values are less than 10 and there is no serious problem of multicollinearity. Table 2 shows the results of the curvilinear regression of firms' digital transformation and innovation performance, where column (1) shows the results of the regression of digital transformation only, digital transformation quadratic term and innovation performance, and column (2) adds control variables to the regression in column (1). The regression results show that the digital transformation primary term (dt1) is significantly positive at the 1% level and the squared term ($dt1^2$) is significantly negative at the 1% level, indicating an inverted U-shaped relationship between digital transformation and innovation performance. That is, before the degree of digital transformation reaches a certain critical value, it plays a facilitating effect on innovation performance, and after exceeding a certain degree, it has a suppressing effect on innovation performance. The above regression results preliminarily verify hypothesis H1.

Table 2: Regression results of digital transformation and innovation performance.

Variable	pat	pat
dt1	0.3699*** (20.4595)	0.2499*** (15.5658)
$dt1^2$	-0.0525*** (-12.3599)	-0.0362*** (-9.5819)
control variable		yes
Constant	3.0593*** (207.9927)	-7.1663*** (-32.9299)
N	21,589	21,589
R-squared	0.0325	0.2383

Note: *, ** and *** denote tests passed at the 10 per cent, 5 per cent and 1 per cent significance levels, respectively; t-values are in parentheses. The following table is the same.

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4.2. Moderating Effect Analysis

The interaction terms of digital transformation (dt1, $dt1^2$) and financial flexibility (ff1) are added on the basis of the curvilinear regression model, in order to avoid the problem of multiple covariance, before generating the interaction terms, dt1, $dt1^2$, and ff1 are centered, and then the centered independent variables are multiplied by the moderator variables to form the interaction terms c_dt1 × c_ff1, and c_dt1^2 × c_ff1. The results are shown in Table 3. shown, column (1) is a full-sample regression, the coefficients of c_dt1^2 and c_dt1^2×c_ff1 are heteroscedastic and the coefficient of c_dt1^2×c_ff1 is significantly positive (β=0.0368, p<0.1), indicating that financial flexibility weakens the inverted U-shaped relationship between digital transformation and innovation performance. A high level of financial flexibility in corporate reserves limits the amount of resources available, reduces the amount of money that can be invested in carrying out digital transformation and other day-to-day activities, reduces the efficiency of resource allocation, and inhibits the innovative development of the enterprise. In addition, dividing financial flexibility into two groups according to the median, with column (2) as the high financial flexibility group and column (3) as the first financial flexibility group, the results also show the weakening effect of financial flexibility. Hypothesis H2 was tested.

Table 3: Results of moderating effects.

Variable	(1)	(2)	(3)
	Full sample	High financial flexibility group	Low financial flexibility group
	pat	pat	pat
c_dt1	0.2477*** (15.4837)	0.2009*** (3.6244)	0.3117*** (10.8428)
c_dt1^2	-0.0361*** (-9.6429)	-0.0064 (-0.5140)	-0.0509*** (-7.6435)
c_dt1×c_ff1	-0.2216*** (-2.7563)	-0.4681*** (-3.7074)	-0.3706 (-1.1052)
c_dt1^2×c_ff1	0.0368* (1.8478)	0.0898*** (2.8591)	0.1897** (2.4691)
c_ff1	-0.2436*** (-4.5142)	-0.2151*** (-2.8833)	0.4138** (2.2072)
control variable	yes	yes	yes
Constant	-7.0621*** (-32.2013)	-7.2657*** (-23.1110)	-6.8016*** (-21.6920)
N	21,589	10,794	10,794
R-squared	0.2393	0.2286	0.2168

4.3. Robustness Test

4.3.1. Inverted U-shaped Relationship Test

Based on the quadratic term coefficients alone does not prove that there is an inverted U-shaped relationship between digital transformation and innovation performance, so the Utest test was conducted and the results are shown in Table 4. First, the dt1 coefficient is positive (β_1=0.2499, p<0.01) and the $dt1^2$ coefficient is negative (β_2=-0.0362, p<0.01), which satisfies condition one;

Second, the Utest test shows that the slope of the left interval is 0.4019 and significant at the 1% level, the slope of the right interval is -0.2335 and significant at the 1% level, the slope of the curve takes a positive value when dt1 takes the minimum value of $dt1_{min}$, and the slope of the curve takes a negative value when dt1 takes the maximum value of $dt1_{max}$, which satisfies condition two;

Thirdly, the interval of digital transformation is (0.0000, 5.1648) and the inflection point is 3.2665, which is within the interval and satisfies condition three.

In summary, as the degree of digital transformation increases, innovation performance increases and then decreases, and reaches its maximum value at the inflection point (dt1 = 3.2665).

Table 4: Inverted U-shaped relationship test between digital transformation and innovation performance.

	Lower bound	Upper bound
Interval	0.0000	5.1648
Slope	0.4019	-0.2335
t-value	20.8791	-7.8904
P>|t|	0.0000	0.0000

4.3.2. Re-measuring Digital Transformation

Considering that the measure of the degree of digital transformation may have an impact on the

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regression results, the measure of Zhao Chenyu et al. (2021) [12] was used to re-measure digital transformation, and the regression results are shown in Table 5, column (1) is the regression without control variables, and after the addition of control variables in column (2), both sets of regression results show that there is an inverted U-shape relationship between digital transformation and innovation performance, and Hypothesis H1 is again tested.

4.3.3. Propensity Score Matching Method

The propensity score matching method is used to solve the endogeneity problem. Firstly, the sample is divided into two groups based on the median digital transformation, with the greater degree of digital transformation as the treatment group and the smaller as the control group. Second, gearing ratio (tdr), return on total assets (roa), cash flow (cash), firm size (size), directors and supervisors shareholding ratio (djg), and two jobs (dual) were used as covariates for matching. The balance test was conducted before matching, and the results of the re-regression after matching are shown in column (3) of Table 5. The estimated results after matching the propensity score for digital transformation and innovation performance are consistent with the regression results.

4.3.4. Innovation Performance Lag One Period

Considering that patent application and granting often take a long time, the innovation performance of enterprises has a lag, so the innovation performance lagged by one period is put into the regression model again for regression analysis, as shown in columns (4) and (5) of Table 5, and the results show that the inverted U-shape effect of digital transformation on innovation performance still exists.

Table 5: This caption has one line so it is centered.

Variable	Re-measuring Digital Transformation		Propensity Score Matching Method	Innovation Performance Lag One Period	
	(1)	(2)	(3)	(4)	(5)
	pat	pat	pat	pat-1	pat-1
dt1			0.2582*** (17.5552)	0.4072*** (20.2115)	0.2891*** (16.0113)
$dt1^2$			-0.0336*** (-9.5405)	-0.0609*** (-13.0474)	-0.0447*** (-10.6018)
dt2	0.6843*** (23.0286)	0.5212*** (19.2257)			
$dt2^2$	-0.0689*** (-14.4022)	-0.0523*** (-12.0217)			
tdr			0.3359*** (6.5047)		
roa			1.2932*** (7.9019)		
cash			0.2236* (1.6970)		
size			0.4691*** (57.6109)		
djg			0.4920*** (11.3594)		
dual			0.0509*** (3.0981)		
control variable		yes			yes
Constant	2.0426*** (47.0684)	-7.7522*** (-35.8998)	-7.5735*** (-44.1177)	3.0773*** (181.3562)	-7.0918*** (-28.6417)
N	21,589	21,589	27,592	17,482	17,482
R-squared	0.0584	0.2564	0.2161	0.0350	0.2365

4.4. Heterogeneity Analysis

4.4.1. Heterogeneity of Property Rights

To further investigate the impact of different property rights on digital transformation and innovation performance, regressions are conducted by grouping enterprises into state-owned and non-state-owned. The regression results are shown in Table 6, columns (1) and (2) are state-owned enterprises, and column (3) is non-state-owned enterprises. The curvilinear regression column (1) for state-owned enterprises is not significant, indicating that there is no inverted U-shaped relationship between digital transformation and innovation performance of state-owned enterprises, and after linear regression, the coefficient of the explanatory variable in column (2) is found to be significant at the 1% level, indicating that the digital transformation of state-owned enterprises has a facilitating effect on innovation performance, which is probably due to the fact that the national policy supports the development of innovation, and state-owned enterprises have relatively digital transformation financing pressure is small and does not affect innovation investment. The core explanatory variables in column (3) of non-state-owned enterprises are

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all significant, indicating an inverted U-shaped relationship between digital transformation and innovation performance. Specifically, the digital transformation of non-state-owned enterprises has a facilitating effect on innovation performance before the critical value, and turns to inhibit after reaching the critical value.

4.4.2. Heterogeneity of Firm Size

Larger enterprises have more innovative elements that can support their long-term sustainable innovation activities [17]. Enterprise digital transformation requires financial and technical support, compared with small-scale enterprises, large-scale enterprises have strong financing ability and are more adaptable to digital transformation. Regression analyses were conducted by dividing enterprise size into two groups according to the median; column (4) in Table 6 is for large-scale enterprises and column (5) is for small-scale enterprises. The regression results show that regardless of size, digital transformation has an inverted U-shaped relationship with innovation performance, specifically, the coefficient of digital transformation for large-scale enterprises is 0.2662, and the coefficient of digital transformation for small-scale enterprises is 0.2349, which indicates that the inverted U-shaped curve of large-scale enterprises is steeper, and that the facilitating and inhibiting effects of digital transformation on innovation performance before and after the threshold are stronger than those of small-scale enterprises. This may be due to the fact that large-scale enterprises have more of their own resources and large business volumes, the enabling effect of digital transformation is stronger, and enterprises use the results of digitisation for innovation activities more than small-scale enterprises in terms of innovation output.

Table 6: Heterogeneity analysis results.

Variable	Heterogeneity of property rights			Heterogeneity of firm size	
	(1)	(2)	(3)	(4)	(5)
	pat	pat	pat	pat	pat
dt1	0.0775** (2.3440)	0.0845*** (5.8167)	0.3064*** (17.1939)	0.2662*** (11.3215)	0.2349*** (10.9791)
$dt1^2$	0.0019 (0.2320)		-0.0460*** (-11.2038)	-0.0373*** (-7.1563)	-0.0376*** (-7.0826)
control variable	yes	yes	yes	yes	yes
Constant	-8.5488*** (-22.2642)	-8.5477*** (-22.2559)	-6.8550*** (-24.1140)	-6.4478*** (-18.7866)	-1.3822*** (-3.6887)
N	6,426	6,426	15,163	10,976	10,613
R-squared	0.2608	0.2608	0.2164	0.1738	0.0535

5. Research Conclusions and Recommendations

With the booming development of digital technology, digital transformation has become an indispensable strategic choice for enterprise development and change. Taking China's A-share listed companies from 2012 to 2021 as a sample, introducing financial flexibility as a moderating variable, constructing a regression model to empirically analyse the relationship between digital transformation and innovation performance, the main research conclusions are as follows: firstly, there is an inverted U-shaped relationship between digital transformation and innovation performance of enterprises. That is, with the increase in the degree of digital transformation, the innovation performance of enterprises shows a trend of increasing first and then decreasing, the moderate level of digital transformation can help enterprises to improve innovation performance, and excessive digital transformation will inhibit enterprise innovation. Second, financial flexibility weakens the inverted U-shaped relationship between digital transformation and innovation performance. Financial flexibility reserves reduce financial support for digital transformation and weaken the effect of digital transformation on innovation performance. Third, the results of heterogeneity analysis found that digital transformation has a facilitating effect on state-owned enterprises, and an inverted U-shaped first facilitating and then inhibiting effect on non-state-owned enterprises, large-scale and small-scale enterprises, and the inverted U-shaped effect is stronger for large-scale enterprises compared to small-scale enterprises.

Based on the conclusions of the study, the following recommendations are made: (1) the implementation of digital transformation of the real economy has been a general trend, the government should provide policy support to actively guide and help enterprises to develop the digital economy. Increase the construction of the Internet, artificial intelligence and other digital economic infrastructure, create a good atmosphere for digital transformation, based on the actual situation of digital work carried out, play the role of local government special funds, encourage the construction of digital talent base, and provide SME financing path support and innovation subsidies. (2) Enterprises should recognise that

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digital transformation is a "double-edged sword" and promote digital transformation moderately. In accelerating the digital process at the same time pay attention to the risks that digital transformation may face, do not blindly increase the investment in digital transformation, to prevent overdoing it, in the implementation of digital transformation, should do a good job in advance of the market research, combined with the market demand and their own characteristics of the digital transformation of the moderate, co-ordination of the digital transformation of the integration of the enterprise organisational structure, development vision. (3) Maintain a certain degree of financial flexibility. In today's rapid economic development, enterprises must establish advanced financial management concepts and pay attention to the degree of flexibility of financial flexibility. In the face of increasingly fierce market competition, as well as the uncertainty brought about by the changing environment, enterprises in the implementation of digital transformation should pay attention to the construction of financial flexibility mechanism, make full use of financial flexibility brought about by the endogenous and exogenous funds, combined with the national policy guidance, based on their own industry characteristics and the actual operating conditions of the enterprise, to reasonably establish a financial flexibility strategy for digital transformation to provide internal financing support to seize the innovation of the The best time for R&D. (4) Rational allocation of resources. Digital transformation helps enterprises to carry out innovative activities, but the development path of enterprises is not only digital transformation and innovation, enterprises should optimise the allocation of resources, improve the efficiency of factor use, reduce inefficient investment, promote transformation and upgrading, and achieve sound growth of enterprises. Macroeconomic development can not be separated from the innovation of microenterprises, with the support of national policies, enterprises should actively carry out innovative activities, improve the conversion rate of innovation results, and promote high-quality economic development.

References

[1] Xiao Xiang, Wang Jinmei, Dong Xiangshu. How Digital Transformation Affects Substantial Innovation in Manufacturing? --Based on the Perspectives of "Digital Empowerment" and "Digital Divide"[J]. Journal of Zhejiang University (Humanities and Social Sciences Edition), 2023, 53(10): 28-50.

[2] SONG Jianing, SONG Zaike. Digital transformation, technology spillovers and innovation performance of manufacturing firms[J]. Economic Reform, 2023(04): 114-122.

[3] Luo Jinlian, Wang Xianglu, Geng Xin. Study on the non-linear impact of digital transformation on corporate innovation output[J]. Research Management, 2023, 44(08): 1-10.

[4] SONG Jing, CHEN Jin. Research on the impact of entrepreneurial social network on enterprise digital construction - the moderating role of strategic flexibility[J]. Science Research, 2022, 40(01): 103-112.

[5] Gong Xingguo, Lu Yao,Lin Chunlei. The impact of strategic differentiation on corporate innovation performance: the mediating role of financing constraints and the moderating role of financial flexibility [J]. Science and Technology Progress and Countermeasures, 2023, 40(16): 142-152.

[6] Dong Yao, Zhang Xixi, Yi Tao. Digital transformation, partner dynamics and corporate dual innovation [J]. Journal of Shanxi University of Finance and Economics, 2023, 45(2): 102-115.

[7] WANG Xiaohong, LI Na, CHEN Yu. Redundant resource regulation, digital transformation and enterprise high-quality development[J]. Journal of Shanxi University of Finance and Economics, 2022, (8): 72-84.

[8] Mu Qingbang, Wang Mengxue. Research on the impact of financial flexibility on corporate performance [J]. Accounting Friends, 2023(03): 55-62.

[9] WEN Jijin. Research on the impact mechanism of financial flexibility on total factor productivity in retail enterprises [J]. Research on Business Economics, 2023, No.867(08): 159-162.

[10] WANG Baozhong, YANG Xiaolu,WANG Translation. Corporate Dual Innovation and Digital Transformation - A Transmission Mechanism Based on Internal Control and Financial Flexibility[J]. Modern Management Science, 2023(04): 153-162.

[11] Wu Fei, Hu Huizhi, Lin Huiyan et al. Corporate digital transformation and capital market performance-empirical evidence from stock liquidity[J]. Management World, 2021, 37(07): 130-144+10.

[12] Zhao Chenyu, Wang Wenchun, Li Xuesong. How digital transformation affects enterprise total factor productivity [J]. Finance and Trade Economics, 2021, 42(07): 114-129.

[13] Zeng Aimin, Fu Yuanliu, Wei Zhihua. Financial Crisis Shocks, Financial Flexibility Reserves and Corporate Financing Behaviour - Empirical Evidence from Chinese Listed Companies[J]. Financial Research, 2011, No.376(10): 155-169.

[14] Liu Tingli, Fang Yu, Wang Yan. Different paths or two divergent paths: the impact of strategic alignment on corporate innovation performance[J]. Science and Technology Management Research,

ISSN 2706-6827 Vol. 6, Issue 6: 71-79, DOI: 10.25236/IJFS.2024.060612

2023, 43(04): 12-21.
[15] Lind T J, Mehlum H. With or without U? The appropriate test for a U-Shaped relationship[J]. Oxford Bulletin of Economics and Statistics, 2010, 72(1): 109-118.
[16] Lin Weipeng, Feng Baoyi. Curve effects and statistical tests in the field of management[J]. Nankai Management Review, 2022, 25(01): 155-166.
[17] Liu Shiyu, Qin Chang. How Does Bank Digital Transformation Affect Corporate Innovation Performance? --Based on credit allocation perspective[J]. Financial Theory and Practice, 2023(09): 49-58.