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A Study of the Mechanisms of Digital Transformation's Impact on Business Resilience

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Abstract: In the context of increasing global economic volatility, digital transformation has become a vital approach for improving enterprise economic efficiency. Drawing on dynamic capability theory and principal - agent theory, this paper empirically investigates the effects of digital transformation and executive shareholding ratio and absorptive capacity on corporate resilience as well as the heterogeneity performance of different types of firms using Chinese Shanghai and Shenzhen A-share firms from 2013-2023 as research objects. This research reveals that digital transformation exerts a notable positive influence on firm resilience. Specifically, digital transformation bolsters firm resilience through the mechanism of increased executive shareholding. Moreover, absorptive capacity acts as a significant moderator, reinforcing the relationship between digital transformation and firm resilience. Additionally, the contribution of digital transformation to firm resilience is more pronounced in non - state - owned enterprises. These discoveries furnish theoretical underpinnings and empirical learning for a more extensive study on the routes by which digital transformation impacts the resilience of listed enterprises.

Keywords: digital transformation, corporate resilience, executive shareholding, absorptive capacity

1. Introduction

The Third Plenary Session of the 20th Central Committee of the Communist Party of China implemented reform measures and strategic arrangements to optimize the mechanism facilitating the profound convergence of the real economy and the digital economy, the landing point for the digital economy to play the functions of cost saving and efficiency improvement lies in the digital transformation. Listed companies as the beneficiaries of the wave of economic digital transformation, in recent years, China's listed companies through the extensive application of digital technology to optimize production processes, reduce costs, improve efficiency [1], play a leading role in innovation drive and industrial upgrading, for the fast - paced development of China's digital economy to inject surging momentum. Digital transformation has changed from "optional" to "mandatory" for many enterprises, and has emerged as a pivotal approach for the transformation and upgrading of conventional growth drivers, while concurrently serving as a cornerstone for cultivating novel economic momentum. Functioning as a critical strategic pathway, it significantly bolsters corporate economic performance and facilitates the realization of high - quality enterprise development. This process not only revitalizes traditional operational models but also creates new opportunities for

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sustainable growth, thereby enhancing the overall competitiveness and efficiency of enterprises in the digital era.

Along with the progression of economic globalization and the frequent occurrence of external shock events, the characteristics of the external environment such as uncertainty and complexity [2] are becoming more and more prominent. More and more scholars pay attention to the topic of resilience. When facing uncertainty shocks, enterprises usually reflect their resilience by the resistance ability that can quickly withstand risks and the recovery ability that can be restored to the normal operating state [3]. According to the mainstream research on enterprise resilience, this paper comprehensively analyzes enterprise resilience from two perspectives: rebound refers to the ability of an organization to recover to its original state, and reverse focuses on reflecting the ability of an organization to not only recover in time, but also further improve and innovate in the face of adversity [4].

Digital transformation can shape enterprise resilience through channels such as improving product quality and increasing the reliability of production processes, enhancing innovation capabilities, and driving enterprise architecture adjustment with data empowerment [5]. However, domestic academic research on the impact of digital transformation on enterprise resilience is still in its infancy, so how digital transformation affects enterprise resilience has become one of the hot topics of current academic attention. Based on this, this paper analyzes the role mechanism of digital transformation on corporate resilience of listed companies from the perspectives of dynamic capacity and principal-agent, as well as the role played by absorptive capacity and executive shareholding ratio, to study the path of the ramifications of digital transformation for corporate resilience of listed companies in a more in-depth manner.

2. Theoretical analysis and research hypotheses

2.1. Digital transformation and business resilience

The research background of enterprise resilience mainly focuses on globalization and rapid technological development at the present time, the external environment faced by enterprises is more and more volatile (Volatility), uncertainty (Uncertainty), complexity (Complexity) and ambiguity (Ambiguity), the so-called VUCA environment [6]. Digital transformation, firstly, can make use of technological innovation, digital tools to engage in business activities, optimize business processes, innovate more business models suitable for the sustainable development of the enterprise, improve the enterprise's ability to cope with, recover from, and grow in the face of an uncertain environment, and achieve the enhancement of enterprise resilience. Conversely, digital transformation strengthens corporate financial stability and enhances risk - taking capacity by improving internal control effectiveness and profitability. It streamlines internal control processes, reducing information asymmetry and enhancing decision - making, thus stabilizing finances. Simultaneously, by optimizing business models and operational efficiency to boost profits, it equips enterprises with a solid financial base for increased risk - taking, driving long - term growth and competitiveness [4]. Based on the theory of dynamic capabilities, digital transformation can enable enterprises to improve perception and insight, grasp innovation opportunities, optimize resource allocation, gain competitive advantages, and flexibly adjust response strategies and strategic directions in a complex and changing market. Digital transformation, as a key driver to stimulate the dynamic capabilities of enterprises, enhances their corporate resilience through the integration and reconfiguration of existing resources and the innovative exploration and utilization of capabilities.

Drawing on the preceding analysis, this research postulates the following hypotheses:

H1: Enterprise digital transformation has a positive contribution to business resilience.

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2.2. Analysis of the regulatory role of absorptive capacity

Dynamic capabilities into absorptive, adaptive and innovative capabilities [7], this paper selects the perspective of absorptive capabilities to discuss the moderating role in digital transformation and listed companies.

Absorptive capacity refers to an enterprise's capability to obtain valuable information and resources from the external environment and turn them into its own business opportunities and competitive advantages [1]. A high level of absorptive capacity is crucial for improving the resilience of listed companies. For one thing, the process of corporate digital transformation is able to provide massive amounts of information and increase the coverage of information. This enables enterprises to capture business opportunities from a multitude of information and keenly perceive business dynamics. Moreover, with the wide application of digital technology, enterprises are able to quickly extract valuable content from digital information quickly, so as to achieve the acquisition and assimilation of knowledge. For another, digital transformation has to a large extent broken down the barriers between enterprises and promoted the internal flow and exchange of knowledge between enterprises, which has continuously injected new vitality into enterprises, and the investment in digital equipment and talents has also enabled enterprises to continuously gain new momentum. During the digital transformation process, these strategic actions directly bolster enterprises' capabilities for new knowledge acquisition. Based on the dynamic capability theory, acquiring valuable information and resources from the external environment can make enterprises become more innovative and flexible, which has a positive impact on enhancing enterprise resilience. Consequently, this study advances the following hypotheses:

H2: The greater the absorptive capacity of a firm, the greater the impact of digital transformation on firm resilience

2.3. Analysis of the mediating role of executive shareholdings

According to the principal-agent theory, enterprise managers have conflict of interest due to the inconsistency between their own goals and the goals of the enterprise owners, the principal, i.e., the enterprise owners are concerned about the perpetual development of the enterprise, the maximization of the enterprise value, the maximization of the value of shareholders, and the agent, i.e., the enterprise managers may choose to make choices that impede the enterprise's long - term growth in order to safeguard their own interests[8] . According to the optimal contract theory, the principal-agent conflict can be mitigated through executive shareholding, and certain equity incentives for executives can change the management attitude of executives from focusing on short-term performance to focusing on perpetual development of the enterprise, and energize executives to proactively monitor the external environmental changes of the enterprise and formulate decisions that are more conducive to navigating the enterprise's diversified market landscape[9] , improve the adaptability of the enterprise and its risk-resistant ability, which will produce the convergence effect of interests and realize the enterprise valuation. interest convergence effect, to achieve the goal of maximizing enterprise value. Consequently, this paper advances the following hypotheses:

H3: Digital transformation improves corporate resilience through increased executive ownership

3. Model building

3.1. Modeling

In this paper, we draw on the study [10] In order to validate H1, the following benchmark regression model is proposed:

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$$RESIi,t = \alpha 1 + \beta 1 CEIi,t + \beta 2 Controlsi,t + Yeart + Industryi + \varepsilon i,t \quad (1)$$

In this context, RESIi,t represents the resilience index of firm i during year t, CEIi,t indicates the digital transformation intensity of firm i in year t, and Controls constitutes a collection of control variables. The subscripts i and t represent individual enterprises and time periods, respectively. Equation (1) is used to test the relationship between digital transformation and enterprise resilience. To enhance the reliability of the regression results, this paper controls for time and industry fixed effects in the model.

3.2. Description of variables

3.2.1. Explanatory variables: the degree of digital transformation of listed firms

In this study, text analysis is utilized to gauge the digital transformation degree of enterprises from five aspects: artificial intelligence technology, big data technology, cloud computing technology, blockchain technology, and digital technology application, with CEI denoting the measurement [10]. Since this kind of data has typical "right skewed" characteristics, this paper logarithmizes it as an overall indicator for illustrating the digital transformation of enterprises.

3.2.2. Explained variable: corporate resilience of listed companies

In this paper, we measure the corporate resilience of enterprises in terms of the rebound dimension [11] and the backlash dimension [12]. The indicators that measure the growth ability of enterprises are selected: annual percentage change in total assets, annual percentage change in operating revenue, and annual percentage change in net profit are evaluated. In this paper, the data of the above indicators are standardized, and the mean value is taken to finally obtain the comprehensive value of corporate toughness, which is expressed by Res.

3.2.3. Moderating variable: absorptive capacity

This paper adopts the intensity of R&D expenditures, i.e., the ratio of annual R&D expenditures to operating revenues of the sample firms as a measure of the absorptive capacity of the firms, which is expressed by ABSORD [13].

3.2.4. Mediating variable: executive shareholding ratio

Executive shareholding refers to the holding of some of the company's shares by senior managers of the enterprise. The research generally starts from two perspectives: one is whether the executives hold shares or not; the other is the proportion of shares held by the executives. This study selects the proportion of executive equity ownership as the measurement indicator, calculated as the proportion calculated by dividing the aggregate shares held by directors, supervisors, and senior executives by the total issued and outstanding shares, which is expressed by MAG.

3.2.5. Control variables

In this paper, in order to ensure the robustness of the data, a series of control variables are set with reference to the control variables [14] , including: firm size (SIZE), financing constraints (SA), two-rights segregation rate (SEP), gearing (LEV), asset turnover (TURNOVER), return on equity (ROE), board of directors' size (BORAD), the first shareholding of the largest shareholder (TOP1) are the control variables.

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3.3. Data sources

A-share listed firms in Shanghai and Shenzhen from 2013 to 2023 are chosen as the research sample, and the sample data are treated as follows: (1) financial enterprises are excluded; (2) ST and *ST companies during the sample period are not included; (3) firms with severe data deficiencies are discarded; (4) all continuous variables are adjusted using a 1% lower and upper bound trim. After screeninga total of 28176 observations are obtained. The data are obtained from CSMAR database. The data processing software used in this paper is Stata17.

4. Empirical analysis

4.1. Descriptive statistics

The table shows the descriptive statistical results of the study variables. The mean (median) of digital transformation is 1.700 (1.610), with a standard deviation of 1.440, a minimum of 0, and a maximum of 5.280. These figures suggest that enterprises with varying levels of digital transformation exhibit right - skewed distribution patterns; the mean (median) of enterprise resilience stands at -0.0100 (-0.0500), with a standard deviation of 0.120, a minimum of -0.130, and a maximum of 0.700. This reveals significant heterogeneity in enterprise resilience levels across different firms; the control variables are not significantly different from the existing studies, and they are all within a reasonable range.

Table 1: Descriptive statistics

Variable	N	Mean	SD	Min	p50	Max.
CEIw	28176	1.700	1.440	0	1.610	5.280
RESw	28176	-0.0100	0.120	-0.130	-0.0500	0.700
MAGw	28176	15.07	19.85	0	2.490	68.32
DIGIw	28154	0.100	0.220	0	0.0200	1
ABSORDw	28176	0.0500	0.0600	0	0.0400	0.310
ADAPTw	28176	-1.100	0.340	-1.730	-1.050	-0.240
SAw	28176	-3.850	0.260	-4.510	-3.840	-3.120
SIZEw	28176	22.27	1.370	19.77	22.08	26.44
SEPw	28176	4.390	7.110	0	0	28.21
LEVw	28176	0.410	0.200	0.0600	0.400	0.870
TURNOVERw	28176	0.600	0.390	0.0800	0.520	2.380
ROEw	28176	0.0700	0.110	-0.540	0.0700	0.320
BOARDw	28176	2.120	0.200	1.610	2.200	2.640
TOP1w	28176	34.08	14.88	8.570	31.92	74.89

4.2. Benchmark regression

A main effect test of digital transformation on business resilience. The regression results of the model are shown in the table, where digital transformation is the explanatory variable (CEI) and corporate resilience is the explanatory variable (RES), while controlling for financing constraints, firm size, bifurcation rate, gearing ratio, asset turnover, return on net assets, board size, stake proportion of the largest shareholder, year and industry fixed effects. A regression coefficient of 0.00146 between digital transformation and corporate resilience is found to be significant at the 1% statistical threshold. Evidently, digital transformation contributes to improving corporate resilience after considering other relevant factors, and Hypothesis H1 is supported.

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Table 2: Baseline regression and robustness test

variant	(1) RESw	(2) RESw
CEIw	0.00146*** (0.000525)	
DIGIw		0.00602** (0.00286)
SAw	0.0247*** (0.00233)	0.0248*** (0.00233)
SIZEw	0.00289*** (0.000568)	0.00316*** (0.000566)
SEPw	0.0000437 (0.0000803)	0.0000421 (0.0000803)
LEVw	-0.393*** (0.00375)	-0.393*** (0.00376)
TURNOVERw	-0.0244*** (0.00171)	-0.0243*** (0.00171)
ROEw	0.0214*** (0.00531)	0.0215*** (0.00532)
BOARDw	-0.0140*** (0.00301)	-0.0138*** (0.00302)
TOP1w	0.000103** (0.0000407)	0.0000999** (0.0000407)
_cons	0.206*** (0.0185)	0.201*** (0.0185)
N	28176	28154
R2	0.426	0.426
adj. R2	0.424	0.424

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

4.3. Robustness tests

To assess the robustness of the findings, taking into account the model, explanatory variables, control variables, and other factors, this paper conducts a robustness test by substituting the explanatory variables for digital transformation, the regression results tabulated demonstrate substantial consistency with prior findings, thereby validating the robustness of the conclusions.

4.4. Moderating effects test

The table presents the results regarding the role of firms' absorptive capacity in the relationship between digital transformation and firm resilience. The coefficient of CEIABSORD is 0.0209 and significant at the 1% level, indicating that absorptive capacity enhances the impact of digital transformation on firm resilience, thereby confirming Hypothesis H2.

Table 3: Mediator analysis and moderator analysis

variant	(1) RESw	(2) MAGw	(3) RESw
CEIw	-0.000381 (0.000661)	0.273*** (0.0923)	0.00137*** (0.000525)
ABSORDw	0.164*** (0.0224)		
CEIABSORDw	0.0209*** (0.00760)		0.0209*** (0.00236)

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Table 3: (continued)

_cons	0.173*** (0.0186)	183.2*** (3.245)	0.146*** (0.0195)
CONTROLS	YES	YES	YES
N	28176	28176	28176
R2	0.432	0.332	0.428
adj. R2	0.430	0.330	0.426

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

4.5. Mediation effects test

Based on the establishment of the baseline effect in the previous section, the study centers around hypothesis H3 for verification. As presented in the table, the regression results indicate that digital transformation has a significantly positive effect on enterprise adaptive capacity at the 1% significance level, with a coefficient of 0.023. This suggests that an enhancement in the degree of digital transformation can notably boost enterprise adaptive capacity. Additionally, digital transformation exhibits a significantly positive impact on executive shareholding at the 1% level, with a coefficient of 0.273, implying that an increase in the digital transformation level can significantly raise the proportion of executive shareholding within enterprises.

4.6. Heterogeneity test

To advance methodologically rigorous examination, this study investigates ownership structure-stratified heterogeneity in digital transformation's organizational resilience effects (state-owned enterprises versus non-state-owned enterprises). Empirical evidence reveals divergent mechanistic pathways: NSOEs exhibit statistically significant resilience amplification through digital transformation (CEI coefficient=0.00185, $p<0.01$), whereas SOEs demonstrate non-significant parameter estimates ($p>0.10$). This dichotomy suggests that market-driven governance architectures in NSOEs potentially enable more effective operational agility and resource reallocation capabilities when implementing digital initiatives, contrasting with SOEs' institutional constraints in technological adaptation.

Table 4: Heterogeneity test

variant	(1) RESw	(2) RESw
CEIw	0.000510 (0.000765)	0.00185*** (0.000664)
_cons	0.274*** (0.0267)	0.158*** (0.0258)
CONTROLS	YES	YES
N	8882	19294
R2	0.405	0.430
adj. R2	0.399	0.427

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

5. Conclusions and policy recommendations

This paper utilizes data from Chinese Shanghai and Shenzhen A-share listed companies during the period of 2013 - 2023 to investigate the influences of digital transformation, executive shareholding, and absorptive capacity on firm resilience, and explores the effects of different equity natures. The research reaches the following conclusions: Firstly, digital transformation can significantly enhance

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corporate resilience, and this finding remains valid after conducting relevant robustness tests. Secondly, from the perspective of absorptive capacity, the study reveals that absorptive capacity amplifies the impact of digital transformation on firm resilience. Third, mechanism validation reveals that executive shareholding operates as a mediating channel, wherein digital transformation reinforces corporate resilience through equity-based incentive alignment between principals and agents. Fourth, ownership-based classification reveals structurally heterogeneous effects, with digital transformation exerting statistically validated stronger resilience-enhancing efficacy in non-state-owned enterprises compared to their state-owned counterparts.

This paper has the following contributions and values: first, in terms of theoretical value, this study combines five important concepts: digital transformation, executive shareholding, absorptive capacity and corporate resilience, providing a new theoretical perspective and analytical framework for researching how corporations can improve their resilience in the digital era. By exploring how digital transformation affects corporate resilience, the moderating role of absorptive capacity, and the mediating role of executive shareholding, this paper can enrich the theories in the fields of corporate strategic management, corporate governance, and organizational behavior, and provide new research ideas and theoretical contributions for academics. In terms of practical value, the research in this paper is of great significance in guiding enterprises to enhance their value and cope with risks in the digital era. Since digital transformation has become a vital trend in enterprise development, enterprises need to explore how to enhance their flexibility and adaptability in dealing with uncertain environments through digital methods. Meanwhile, executive shareholding, as an effective incentive mechanism in modern corporate governance, has an important impact on the governance structure and decision-making mechanism of enterprises. Studying how executive shareholding affects the resilience of enterprises in the process of digital transformation can provide a reference for enterprises to optimize their shareholding structure and improve their governance efficiency.

In light of these findings, this paper proposes the following policy suggestions:

Increase support for the research and development of key digital technologies, which can be done by setting up special funds and building digitalization platforms, increasing investment in the research and development of emerging digital technologies, and building up a flexible eco-system operation mode for enterprises to convert external knowledge into independent digital technology exploration. Encourage enterprises to strengthen cooperation with science and technology enterprises, through technology licensing, joint research and development, and other ways to quickly obtain advanced digital technology, to overcome the shortcomings of enterprises in the hardware foundation, industrial software, and data transmission, to accelerate the process of digital transformation. Encourage enterprises to strengthen cooperation with colleges and universities and research institutions to jointly train professionals with digital skills. Formulate preferential talent introduction policies to attract overseas high-level digital talents to return to China for business and employment, encourage them to participate in digital transformation projects of listed companies, create a good ecological environment for talent development, provide sustainable innovation power for digital transformation of listed companies.

Fine-tuning the formulation of digital transformation policies. Leveraging the characteristics of refined management in the digital economy, for enterprises of diverse natures, it is imperative to enhance the top - level design and policy coordination for state - owned enterprises. State - owned enterprises should give full play to their leading and coordinating roles, and be guided to establish a multi - party cooperation and coordination mechanism with digital enterprises and upstream and downstream firms in the industrial chain, thereby reaching a consensus on accelerating the digital transformation process; for non-state-owned enterprises, it is imperative to proactively steer enterprises towards augmenting digital transformation investments and concurrently intensify support for non - state - owned enterprises' digital transformation endeavors. For non-state-owned enterprises,

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while increasing the support for digital transformation, we should take the initiative to guide enterprises to increase their investment in digital transformation, help them achieve continuous innovation in the fierce competition, realize the organic combination of knowledge innovation, technological innovation, industrial innovation, drive the transformation and deployment of digital attainments to improve the core competitiveness of non - state - owned enterprises throughout digital transformation.

References

[1] *Zhang Hongchang,Ding Rui. How Digital Transformation Enhances the Resilience of High-Tech Manufacturing Firms-Based on the Mediating Effect of Dynamic Capabilities[J/OL]. Journal of Guizhou University of Finance and Economics,1-19[2025-04-25].http://kns.cnki.net/kcms/detail/52.1156.F.20241127.1321.002.html.*

[2] *WANG Guohong,YUE Xiangyu,HUANG Hao. How digital transformation affects firm resilience-a moderated mediation effect model[J]. Technological Economics,2024,43(01):101-112.*

[3] *LUO Liangwen,ZHANG Linlin,WANG Chen. Digital transformation and corporate resilience-Evidence from Chinese A-share listed firms[J]. Reform,2024,(05):64-79.*

[4] *YANG Tingfang,CHEN Yanqing,ZHOU Jiali. A study on the impact of enterprise digital transformation on corporate resilience - empirical data from Chinese listed companies[J]. Industrial Technology and Economics,2025,44(01):55-66.*

[5] *LI Xiaoxiang,KONG Mengxiang. A study on the impact of digital transformation on corporate resilience - moderating effect based on environmental uncertainty[J]. Journal of Jilin College of Commerce and Industry,2023,39(05):49-55.DOI:10.19520/j.cnki.issn1674-3288.2023.05.014.*

[6] *Ding, Shih-Yuan,Chen, Zhi-Bin. Digital transformation, common institutional ownership and corporate resilience [J]. Finance and Accounting Newsletter,2025,(02):24-28.DOI:10.16144/j.cnki.issn1002-8072.2025.02.020.*

[7] *Wang C L, Ahmed P K. Dynamic capabilities: a review and research agenda[J]. International Journal of Management Reviews, 2007,9(1): 31~51.*

[8] *GUO Lingxiu,GUO Xiaomin. Executives' overseas background, executive shareholding and corporate investment in technological innovation[J]. Finance and Accounting Newsletter,2020,(22):40-44.DOI:10.16144/j.cnki.issn1002-8072.20200728.001.*

[9] *Gompers P,Ishii J,Metrick A.Corporate Governance and Equity Prices [J].Quarterly Journal of Economics,2003, 118(1):107-156*

[10] *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.DOI:10.19744/j.cnki.11-1235/f.2021.0097.*

[11] *Zhou Ping,Lin Nan. Growth of entrepreneurial-oriented firms:The role of incentive-based and supervisory corporate governance-an empirical study based on Chinese GEM listed companies[J]. Economic Management,2015,37(03):44-55.DOI:10.19616/j.cnki.bmj.2015.03.007.*

[12] *GUO Xiaochuan,PAN Yuyao,DU Yaru. Research on new technology integration, dynamic capabilities and resource-based enterprise performance[J]. Science Management Research,2019,37(06):113-118.DOI:10.19445/j.cnki.15-1103/g3.2019.06.019.*

[13] *ZHAO Feng,WANG Tienan,WANG Yu. External technology acquisition and product diversification in open innovation:A study of the moderating role of dynamic capabilities[J]. Management Review,2016,28(06):76-85+99.DOI:10.14120/j.cnki.cn11-5057/f.2016.06.008.*

[14] *YANG Fen,Lv Jianjun. Research on the impact of digital economy development on enterprise resilience[J/OL]. Finance and Accounting Newsletter,1-6[2025-04-28].https://doi.org/10.16144/j.cnki.issn1002-8072.20250208.003.*