

THE JOINT EFFECTS OF CEOs' CHARACTERISTICS AND FIRM DIGITALIZATION ON ASSET PRICING: EVIDENCE FROM THE CHINESE CAPITAL MARKET*

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Abstract

This research article aims to: 1) To examine whether firm digital transformation is associated with subsequent stock returns in the Chinese A-share market. 2) To investigate the direct effects of CEO age, gender, overseas experience, hometown identity, and CEO duality on stock returns. 3) To analyze the moderating effects of CEO characteristics on the relationship between firm digital transformation and stock returns. This study conducts a quantitative empirical research study collecting panel data from approximately 2,500 non-financial listed firms in the Chinese A-share market over the period 2008–2023, yielding 17,820 firm-year observations; and analyzes the data using panel regression models and Fama–MacBeth cross-sectional regressions to test both direct and moderating effects.

The research results found that: 1) Firm digital transformation is positively and significantly associated with subsequent stock returns, indicating the existence of a digital premium in the capital market. 2) CEO characteristics exhibit

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heterogeneous direct effects on stock returns, with CEO age negatively related to future returns and overseas experience positively associated with stock performance, while gender shows marginal significance and hometown identity and CEO duality do not present robust independent effects. 3) CEO characteristics significantly moderate the relationship between firm digital transformation and stock returns, as the digital premium is stronger under overseas-experienced and dual CEOs but weaker under older and hometown CEOs.

Keywords: Digital transformation; CEO characteristics; Asset pricing; Stock returns

Introduction

The rapid expansion of the digital economy has fundamentally reshaped corporate strategy and capital markets. In China, digital transformation has become a national priority, with firms increasingly adopting technologies such as big data, artificial intelligence, and cloud computing to enhance competitiveness. Emerging evidence suggests that digital transformation improves firm transparency, stock price informativeness, and resilience during market shocks (Feng et al., 2024; Li et al., 2024). However, whether investors systematically reward digitalization with higher stock returns—and whether this effect depends on leadership—remains underexplored.

At the same time, growing research highlights that CEO characteristics significantly influence firm strategy and market outcomes. Recent evidence shows that CEO hometown identity reduces default risk through stronger local ties (Liu et al., 2025), while CEO overseas experience enhances firms' digital transformation and dynamic capabilities (Xu & Hou, 2024). These findings suggest that leadership attributes may shape not only corporate behavior but also how markets perceive and price strategic initiatives.

Despite advances in both digital transformation research and CEO characteristics literature, limited attention has been paid to their intersection. It is plausible that the stock market's response to digital transformation depends on who leads the firm. A globally experienced CEO may better extract value from digital investments, whereas a locally embedded or more conservative leader may limit the realization of digital benefits. Therefore, CEO traits and digitalization may jointly influence asset pricing outcomes.

This study examines the combined effects of CEO characteristics and firm digital transformation on stock returns in China's A-share market from 2008 to 2023. We focus on five CEO attributes: age, gender, overseas experience, hometown identity, and CEO duality. A firm-level digital transformation index is constructed through textual analysis of annual reports. We then test whether digitalization predicts subsequent stock returns and whether CEO characteristics moderate this relationship.

Our findings show that digital transformation is positively associated with future stock returns. More importantly, the magnitude of this effect varies across leadership profiles. The return premium of digitalization is stronger under CEOs with overseas experience and CEO duality, but weaker under older or hometown CEOs. These results indicate that both technological strategy and managerial attributes jointly shape investor expectations and asset pricing.

This study contributes to the literature in three ways. First, it integrates digital transformation and CEO characteristics into a unified asset pricing framework. Second, it provides recent evidence from China, one of the world's fastest-digitizing economies. Third, it highlights the importance of leadership heterogeneity in explaining cross-sectional stock return variation.

Objectives

1. To examine whether firm digital transformation is associated with subsequent stock returns in the Chinese A-share market.
2. To investigate the direct effects of CEO age, gender, overseas experience, hometown identity, and CEO duality on stock returns.
3. To analyze the moderating effects of CEO characteristics on the relationship between firm digital transformation and stock returns.

Literature Review

1. CEO Characteristics and Stock Performance

Recent research highlights the critical role of CEO characteristics in shaping firm behavior and market outcomes. Managerial attributes influence strategic orientation, innovation capability, disclosure quality, and risk management, which in turn affect firm value and stock performance.

This study is primarily grounded in Upper Echelons Theory, which posits that executives' observable characteristics reflect deeper cognitive bases and values that shape strategic decisions and organizational outcomes. In addition, Imprinting Theory suggests that formative career experiences leave persistent effects on managerial cognition, influencing long-term strategic behavior.

CEO age is associated with differences in transparency and risk-taking. Twongirwe and Bakundana (2025) document that firms led by older CEOs exhibit lower stock price synchronicity, indicating greater firm-specific information incorporation and improved transparency. Younger CEOs, by contrast, are generally viewed as more growth-oriented and risk-tolerant. These differences imply that CEO age may influence both expected returns and volatility through distinct risk and information channels.

CEO overseas experience represents another important managerial trait, particularly in emerging markets. Xu and Hou (2024) show that CEOs with foreign

experience significantly promote corporate digital transformation by enhancing dynamic capabilities. Similarly, Zhang and Dong (2023) find that foreign-experienced CEOs improve ESG performance, suggesting stronger governance and broader strategic vision. Such capabilities may strengthen investor confidence and positively influence firm valuation.

CEO hometown identity reflects local embeddedness and social capital. Liu et al. (2023) find that firms led by hometown CEOs exhibit lower default risk due to stronger reputation concerns and the ability to mobilize local resources. While reduced financial risk may enhance stability, local embeddedness may also affect strategic flexibility, leaving its overall impact on stock performance context-dependent.

CEO duality, defined as the CEO simultaneously serving as board chair, concentrates leadership authority. Although governance concerns arise from reduced monitoring, unified leadership may facilitate faster strategic execution and organizational alignment, particularly during periods of transformation.

Consistent with Upper Echelons Theory, these demographic and experiential characteristics serve as strategic determinants that shape firm risk preferences and market valuation outcomes.

Overall, contemporary evidence suggests that CEO demographic and experiential characteristics shape firm risk profiles, governance quality, and strategic direction, all of which may translate into differences in stock market performance.

2. Firm Digitalization and Asset Pricing

Digital transformation refers to the integration of digital technologies into business processes, products, and organizational structures. As a form of intangible investment, digitalization enhances operational efficiency, innovation capacity, and information transparency.

Recent empirical studies provide evidence that digital transformation improves capital market outcomes. Li et al. (2024) show that digitalization

increases stock price informativeness, reducing information asymmetry between firms and investors. Feng et al. (2024) further demonstrate that digital transformation alleviates stock price delay, particularly in firms with higher pre-existing information opacity. These findings indicate that digitalization enhances market efficiency and accelerates information incorporation into prices.

Beyond information effects, digital transformation contributes to broader corporate performance dimensions. He and Su (2022) document that digital transformation promotes green innovation among Chinese firms, while Liu et al. (2025) find that digitalization improves ESG performance. During periods of economic disruption, such as the COVID-19 pandemic, firms with higher levels of digital transformation exhibited stronger stock resilience and superior performance (Zhang et al., 2024).

From an asset pricing perspective, digitalization may affect expected returns through multiple channels. By improving transparency and reducing operational risk, digital transformation can lower required risk premiums. Simultaneously, enhanced innovation and growth opportunities may raise future cash flow expectations. If markets do not immediately and fully incorporate the long-term benefits of digital investments, digitalized firms may experience superior stock performance as information is gradually reflected in prices.

From the perspective of Upper Echelons Theory, digital transformation can therefore be viewed as a strategic choice influenced by executive cognition and leadership attributes, linking managerial characteristics to capital market outcomes through digital strategy.

3. CEO Characteristics and Digital Transformation

Recent literature increasingly emphasizes the interaction between leadership attributes and digital strategy. Xu and Hou (2024) show that CEOs with overseas experience significantly accelerate digital transformation, particularly

when decision-making authority is concentrated. This suggests that managerial background influences the effectiveness of digital initiatives.

Drawing on Upper Echelons Theory and Imprinting Theory, CEOs' prior experiences—such as overseas exposure—may shape their openness to technological innovation and their willingness to undertake digital restructuring, thereby influencing firm-level digital outcomes.

Given that digital transformation enhances information transparency, innovation outcomes, and ESG performance (Li et al., 2024; Liu et al., 2025), the ability of the CEO to implement and integrate digital strategies becomes a critical determinant of firm value. Leadership traits such as global exposure, experience, and governance structure may therefore shape how effectively digital investments translate into capital market performance.

In sum, existing research indicates that both CEO characteristics and firm digitalization independently affect corporate outcomes and market valuation. However, the combined influence of managerial attributes and digital strategy on asset pricing remains an area warranting further empirical investigation.

Methodology

1. Research Design

This study adopts a quantitative empirical research design using panel data analysis. The objective is to examine the impact of CEO characteristics and firm digital transformation on stock returns in the Chinese capital market. The study applies both panel regression models and Fama–MacBeth cross-sectional regressions to test the relationships and ensure robustness of results.

The research is archival in nature, relying on secondary data from financial databases and corporate disclosures.

2. Population and Sample

The population consists of all Chinese A-share listed firms on the Shanghai and Shenzhen Stock Exchanges. The study focuses on the period from 2008 to 2023, capturing the emergence and expansion of digital transformation in corporate disclosures.

Financial institutions, including banks and insurance companies, are excluded due to their distinct regulatory and reporting frameworks.

After merging financial data, stock return data, and CEO information, and excluding firms with incomplete observations, the final sample comprises approximately 2,500 firms and about 18,000 firm-year observations.

3. Sampling Procedure

The study employs purposive sampling based on data availability and research criteria. Firms are included if they:

- 1) Are listed as A-share companies during 2008–2023;
- 2) Belong to non-financial industries;
- 3) Have complete annual financial statements;
- 4) Have accessible annual report text for digitalization measurement;
- 5) Provide complete CEO biographical information.

Observations with missing key variables are removed. Financial variables are winsorized at the 1% level to mitigate the influence of extreme outliers.

4. Instrument Construction and Validation

CEO characteristics are obtained from firms' annual reports and executive profile data available in the CSMAR database. For each firm-year observation, the CEO (or general manager) is identified and relevant demographic and governance attributes are coded. CEO age is measured in years at the end of the fiscal year. CEO gender is defined as a dummy variable equal to 1 if the CEO is female and 0 otherwise. CEO overseas experience is coded as 1 if the CEO has significant educational or professional experience outside mainland China, based on

biographical disclosures. CEO hometown identity is defined as 1 if the CEO's place of origin matches the province in which the firm's headquarters is located. CEO duality is measured as a dummy variable equal to 1 if the CEO concurrently serves as chairperson of the board in the same year.

All variables are constructed following established definitions in recent Chinese corporate governance literature, ensuring consistency and measurement validity.

5. Data Collection

Financial statement data and stock return data are obtained from the China Stock Market and Accounting Research (CSMAR) database and the WIND database. These databases provide accounting variables, stock prices, and trading data.

CEO information is collected from executive profiles within CSMAR and cross-checked with annual reports.

Annual stock returns are calculated as buy-and-hold returns aligned with disclosure timing. Specifically, returns are measured over the 12-month period following the release of annual reports to allow the market to incorporate disclosed information.

6. Data Analysis

The primary dependent variable in this study is the firm's annual stock return over the subsequent 12-month period. In addition to raw buy-and-hold returns, risk-adjusted returns are examined using factor-adjusted performance measures to ensure that the findings are not driven solely by systematic risk exposure.

To examine the impact of digital transformation and CEO characteristics on future stock performance, panel regression models are estimated. The empirical specification regresses future stock returns on the Digital Transformation Index, CEO characteristic variables, and the interaction terms between digitalization and CEO characteristics. A set of control variables is included to account for established determinants of cross-sectional stock returns, including firm size, book-to-market ratio, leverage, profitability (ROA), momentum, and return volatility.

Industry and year fixed effects are incorporated to control for sector-specific factors and macroeconomic conditions. Standard errors are clustered at the firm level to address potential heteroskedasticity and serial correlation within firms over time.

To further enhance robustness, Fama–MacBeth cross-sectional regressions are conducted. Specifically, cross-sectional regressions are estimated annually, and the time-series averages of the coefficients are computed. This approach mitigates the influence of common shocks across firms within a given year and provides additional validation of the empirical results.

Overall, the use of both panel regression and Fama–MacBeth methodologies strengthens the reliability and robustness of the study’s findings.

Results

This section presents the empirical findings in accordance with the three research objectives. We begin with descriptive statistics to provide an overview of the sample characteristics, followed by baseline regressions examining the direct effects of firm digital transformation and CEO characteristics on subsequent stock returns. Finally, we analyze the moderating effects of CEO traits on the relationship between digital transformation and stock returns through interaction models.

4.1 Descriptive Statistics

Table 1 reports summary statistics for the main variables over the period 2008–2023.

Table 1. Descriptive Statistics (2008–2023)

Variable	Mean	St.Dev.	P25	Median	P75
Stock Return (%)	14.5	47.2	-12.0	10.4	33.7
Digitalization Index (% of words)	0.38	0.50	0.00	0.25	0.60
CEO Age (years)	50.2	6.8	46	50	55
Female CEO (0/1)	0.058	0.234	0	0	0
CEO Overseas (0/1)	0.21	0.41	0	0	0
CEO Hometown (0/1)	0.30	0.46	0	0	1
CEO Duality (0/1)	0.20	0.40	0	0	0
Firm Size (¥ billion)	11.3	28.5	1.8	3.9	9.7
Book-to-Market (B/M)	0.50	0.28	0.30	0.47	0.66
ROA (%)	5.8	7.4	1.9	5.2	9.2
Leverage (%)	42.5	21.0	26.4	42.1	56.3

The average annual stock return is 14.5% with substantial volatility (SD = 47.2%). The Digitalization Index has a mean of 0.38% and median of 0.25%, indicating a right-skewed distribution with many firms reporting minimal digital content. CEO age averages 50.2 years. Female CEOs account for 5.8% of observations, overseas-experienced CEOs 21%, hometown CEOs 30%, and CEO duality appears in 20% of firm-years.

To explore preliminary differences in digitalization across CEO profiles, Table 2 presents subgroup comparisons.

Table 2 Digitalization Index by CEO Characteristic Subgroups

CEO Characteristic	Group Definition	Mean Digitalization (%)	Comparison (Diff.)
CEO Age	Young (Age < 50)	0.45%	vs Old (Age ≥ 50): +0.13 * (p = 0.02)
	Old (Age ≥ 50)	0.32%	

CEO Gender	Female CEO	0.50%	vs Male CEO: +0.13
	Male CEO	0.37%	(p = 0.10)
CEO Overseas Experience	Returnee CEO = Yes	0.55%	vs No: +0.22 ***
	Returnee CEO = No	0.33%	(p < 0.01)
CEO Hometown Identity	Hometown CEO = Yes	0.34%	vs No: -0.05
	Hometown CEO = No	0.39%	(p = 0.30)
CEO Duality	Duality = Yes	0.47%	vs No: +0.11 **
	Duality = No	0.36%	(p = 0.03)

Younger CEOs, overseas-experienced CEOs, and dual CEOs are associated with significantly higher digitalization levels. Hometown CEOs show slightly lower digitalization, though the difference is not statistically significant.

Objective 1

To examine whether firm digital transformation is associated with subsequent stock returns in the Chinese A-share market.

Table 3 presents baseline panel regressions of one-year-ahead stock returns.

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Digitalization Index	8.37***	8.21***	8.30***	8.45***	8.28***	8.19***	7.56***
	(3.45)	(3.39)	(3.42)	(3.49)	(3.40)	(3.38)	(3.11)
CEO Age		–					–
		0.278**					0.253**
		(–2.12)					(–2.03)
Female CEO (dummy)			4.17*				3.55*
			(1.78)				(1.68)
CEO Overseas (dummy)				3.94***			2.80**
				(2.59)			(2.00)

CEO Hometown (dummy)					-2.10*		-1.88
					(-1.71)		(-1.57)
CEO Duality (dummy)						1.25	0.98
						(0.82)	(0.65)
Constant	5.21	19.37***	3.84	4.97	6.10	5.78	17.45***
	(0.29)	(3.30)	(0.21)	(0.28)	(0.34)	(0.32)	(2.89)
Controls & FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17,820	17,820	17,820	17,820	17,820	17,820	17,820
R-squared	0.108	0.110	0.109	0.112	0.109	0.108	0.120

In Model (1), the Digitalization Index coefficient equals 8.37 ($t = 3.45$), significant at the 1% level. In the full specification (Model 7), the coefficient remains positive and significant at 7.56 ($t = 3.11$).

These results indicate that greater firm digital transformation is positively associated with higher subsequent stock returns. Economically, a 1 percentage-point increase in digital word share corresponds to approximately 7.56–8.37 percentage points higher annual returns, supporting Objective 1.

Objective 2 To investigate the direct effects of CEO age, gender, overseas experience, hometown identity, and CEO duality on stock returns.

Objective 2 is examined using the same baseline regression results reported in Table 3, particularly Model (7), where all CEO characteristics are included jointly. While Objective 1 focuses on the Digitalization Index, Objective 2 interprets the main-effect coefficients of CEO variables from the same specification.

In Model (7), CEO Age is negatively and significantly related to stock returns (-0.253 , $t = -2.03$), indicating that firms led by older CEOs tend to earn lower subsequent returns. CEO Overseas experience is positively and significantly associated with returns (2.80 , $t = 2.00$), suggesting that internationally experienced CEOs contribute to stronger market performance.

Female CEO has a positive but only marginally significant coefficient (3.55, $t = 1.68$). CEO Hometown (−1.88) and CEO Duality (0.98) are not statistically significant in the full model.

Overall, the results show that CEO age and overseas experience have clear direct effects on stock returns, while gender provides weaker evidence and hometown identity and duality do not exhibit independent effects once other factors are controlled for.

Objective 3 To analyze the moderating effects of CEO characteristics on the relationship between firm digital transformation and stock returns.

Table 4 Interaction Regressions

Variable	(1)	(2)	(3)	(4)	(5)
Digitalization Index	7.89***	7.44***	6.98***	8.60***	8.37***
	(3.26)	(3.06)	(2.90)	(3.38)	(3.33)
DigitalIndex × CEO Age	−0.152**				−0.138*
	(−2.04)				(−1.85)
DigitalIndex × Female CEO		4.21			3.80
		(1.16)			(1.05)
DigitalIndex × CEO Overseas			5.90**		5.01**
			(2.12)		(2.01)
DigitalIndex × CEO Hometown				−4.77**	−4.15**
				(−2.10)	(−1.97)
DigitalIndex × CEO Duality					+3.05*
					(1.67)
CEO Age (main effect)	−0.262**	−0.271**	−0.255**	−0.249**	−0.240**
	(−2.09)	(−2.16)	(−2.05)	(−1.99)	(−2.01)
Female CEO (main effect)	3.50*	3.20	3.45*	3.58*	3.10
	(1.65)	(1.50)	(1.63)	(1.69)	(1.46)
CEO Overseas (main effect)	2.60**	2.55**	1.98	2.70**	1.80
	(1.98)	(1.96)	(1.55)	(2.01)	(1.42)

CEO Hometown (main effect)	-1.80	-1.85	-1.70	-1.20	-1.10
	(-1.52)	(-1.56)	(-1.44)	(-0.98)	(-0.91)
CEO Duality (main effect)	0.90	0.95	0.88	0.82	0.50
	(0.60)	(0.63)	(0.58)	(0.55)	(0.33)
Controls & Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	17,820	17,820	17,820	17,820	17,820
R-squared	0.122	0.121	0.124	0.125	0.131

Table 4 reports the interaction regressions. Across Models (1)–(5), the coefficient on Digitalization Index remains positive and statistically significant, indicating a consistent digital premium.

Model (1) shows that the interaction between Digitalization and CEO Age is negative and significant (-0.152^{**} ; -0.138^{*} in Model 5). This suggests that the positive effect of digital transformation on stock returns becomes weaker as CEO age increases.

Model (3) indicates a positive and significant interaction between Digitalization and CEO Overseas (5.90^{**} ; 5.01^{**} in Model 5), implying that overseas experience strengthens the return impact of digital transformation.

Model (4) reports a negative and significant interaction between Digitalization and CEO Hometown (-4.77^{**} ; -4.15^{**} in Model 5), suggesting that hometown CEOs reduce the market reward associated with digital initiatives.

In Model (5), the interaction between Digitalization and CEO Duality is positive and marginally significant (3.05^{*}), indicating that unified leadership may enhance the effectiveness of digital transformation. By contrast, the interaction with Female CEO is not statistically significant.

Overall, the results show that the return effect of digital transformation varies by CEO characteristics. The digital premium is stronger under younger and overseas-experienced CEOs and weaker under hometown CEOs.

Discussion

1. The results of Objective 1 indicate that firm digital transformation is positively and significantly associated with subsequent stock returns in the Chinese A-share market. The Digitalization Index remains positive and statistically significant across all model specifications, suggesting that firms with greater digital-related disclosure experience higher one-year-ahead returns. This may be because digital transformation enhances information transparency, operational efficiency, and innovation capacity, thereby improving firm fundamentals and reducing information asymmetry perceived by investors. As a result, the capital market rewards digitally proactive firms with higher valuations and returns.

These findings are consistent with Feng, P. et al. (2024), who studied Chinese listed firms and found that digital transformation alleviates stock price delays and improves market efficiency, indicating that digitalization enhances the speed and quality of information incorporation into prices. Similarly, Li, W. et al. (2024) found that digitalization improves stock price informativeness by bridging information gaps between firms and investors. Together, these studies support the argument that digital transformation generates a measurable “digital premium” in capital markets.

2. The findings for Objective 2 show that CEO characteristics exert heterogeneous direct effects on stock returns. CEO age is negatively and significantly related to future returns, indicating that firms led by older CEOs tend to generate lower subsequent stock performance. In contrast, CEOs with overseas experience are associated with significantly higher returns. Female CEOs show a positive but only marginally significant effect, while CEO hometown identity and CEO duality do not display significant independent effects in the full specification.

This pattern may reflect differences in managerial cognition, risk preferences, and exposure to international knowledge. Younger CEOs may be more adaptive to technological disruption and strategic change, whereas

overseas-experienced CEOs may bring global perspectives, advanced managerial practices, and stronger dynamic capabilities.

These findings align with Twongirwe, C. and Bakundana (2025), who found that CEO age influences stock price behavior and information dynamics, suggesting that managerial age shapes market outcomes. Likewise, Zhang, Y. and Dong (2023) reported that CEOs with foreign experience enhance corporate strategic outcomes and external stakeholder perceptions, supporting the positive valuation effect associated with internationally experienced executives.

3. The results for Objective 3 demonstrate that CEO characteristics significantly moderate the relationship between digital transformation and stock returns. Specifically, the interaction between Digitalization and CEO Age is negative and significant, indicating that the positive return effect of digital transformation weakens as CEO age increases. In contrast, the interaction between Digitalization and CEO Overseas is positive and significant, suggesting that overseas experience strengthens the digital premium. The interaction with CEO Hometown identity is negative and significant, implying that hometown CEOs dampen the market reward for digital initiatives. CEO duality exhibits a positive and marginally significant moderating effect, whereas the interaction with Female CEO is not statistically significant.

These findings may be explained by differences in strategic openness, global exposure, and leadership authority. Younger and internationally experienced CEOs may possess stronger dynamic capabilities and greater willingness to adopt emerging technologies, thereby enhancing the effectiveness of digital investments. Conversely, hometown CEOs may prioritize local stakeholder stability over aggressive innovation strategies, reducing the perceived growth potential of digital initiatives in the eyes of investors.

These results are consistent with Xu, Z. and Hou (2024), who found that CEO overseas experience strengthens corporate digital transformation through enhanced dynamic capabilities. They also align with Liu, X. et al. (2023), who

showed that CEO hometown identity influences firm risk outcomes, highlighting how local embeddedness can shape market perceptions and financial consequences.

Overall, the discussion confirms that digital transformation generates a positive stock market premium, but its magnitude depends critically on CEO characteristics. The findings underscore that digital strategy and leadership attributes jointly determine market valuation outcomes, emphasizing the importance of aligning executive profiles with strategic transformation initiatives.

Limitations

This study has several limitations. First, firm digitalization is measured through textual analysis of corporate disclosures, which may not fully capture the actual depth or effectiveness of digital implementation within firms. Second, CEO characteristics are proxied by observable demographic variables, which may not completely reflect underlying cognitive traits or leadership quality. Third, the findings are based on the Chinese capital market, which may limit their generalizability to other institutional contexts.

Recommendation

1. Align CEO selection with digital strategy by prioritizing younger and overseas-experienced leaders during periods of digital transformation.
2. Provide digital leadership training or external advisory support for firms led by older or locally embedded CEOs to enhance digital readiness.
3. Enhance transparent and standardized disclosure of digital initiatives to strengthen investor confidence and reduce information asymmetry.
4. Carefully implement CEO duality during strategic transformation while maintaining effective governance oversight mechanisms.

5. Encourage regulatory bodies to develop clearer reporting guidelines for digital transformation activities in capital markets.

6. Support international managerial exposure programs to strengthen firms' global orientation and digital capabilities.

Future Research Directions

1. Apply quasi-experimental or causal inference methods to better identify the causal impact of CEO characteristics and digital transformation on asset pricing.

2. Extend future studies to other countries and explore additional innovation domains such as ESG performance and AI adoption to improve external validity and theoretical generalization.

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