

The Impact of Female Executives on Financial Performance Based on the Moderating Effect of Digital Transformation

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Abstract: Using a sample of A-share listed companies in Shanghai and Shenzhen from 2012 to 2023, this paper explores the impact of female executives on financial performance and examines the moderating effect of the degree of digital transformation. The results show that: (1) there is a positive correlation between female executives and financial performance; (2) the improvement in digital transformation inhibits the positive impact of female executives on financial performance. Enterprises should provide more career development opportunities, eliminate gender bias, and select women with leadership qualities to join management, thereby creating value for the organization. Simultaneously, female executives should enhance their awareness of technological innovation and adopt a “digital” mindset. In the wave of the digital economy, they should leverage digital technologies for research, design, production, and operations, seize opportunities for reform, and help enterprises improve quality and efficiency.

Keywords: Female executives; Digital transformation; Financial performance

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1. Introduction

The improvement of enterprise financial performance requires both internal and external efforts, with management serving as a critical component of the enterprise. With advancements in science and technology and improvements in education levels, an increasing number of women are assuming roles such as chairman, general manager, and director. Can the inclusion of women in top management teams significantly enhance enterprise performance? What impact will female executives have on financial performance in the digital economy?

From the perspective of “female power,” Wang ^[1] argues that female executives, with their unique leadership qualities and personality traits, can enrich the decision-making processes and strategic thinking of enterprises. This contributes to internal harmony and stability within management, fostering a positive

atmosphere for strategic reform and greater receptiveness to digital transformation.

Conversely, from the perspective of “female dilemma,” Wang ^[1] contends that female executives may exhibit greater caution, sensitivity, and conservatism due to the high resource investments, extended return cycles, and significant uncertainties and risks associated with digital transformation. As a result, enterprises led by female executives may display hesitant and negative responses to digital transformation initiatives.

To address these issues, this paper conducts an empirical analysis of the relationship between digital transformation, female executives, and financial performance.

2. Literature review and theoretical hypotheses

2.1. Female executives and corporate performance

Female executives have a positive impact on corporate performance. Carter *et al.* ^[2] used Tobin’s Q value to evaluate corporate performance and identified a significant positive correlation between the proportion of female directors and corporate value. Ren *et al.* ^[3], using listed private enterprises as observational samples, found that female executives contribute to enhancing corporate performance. According to resource dependence theory ^[4], women enhance the heterogeneity of top management teams, and their unique cognitive abilities and thought processes improve the team’s capacity for information search. Smith *et al.* ^[5] demonstrated that female executives facilitate the acquisition of high-quality human resources and establish efficient information transmission channels within enterprises.

The female leadership style theory posits that female leaders emphasize collaboration, interaction, and maintaining harmonious relationships ^[6]. Consequently, female senior managers are more inclined to cooperate with organizations, actively listen to employees’ suggestions, and excel in internal and external communication. These attributes allow them to make significant contributions to corporate management and decision-making processes. Such management qualities foster the enhancement of corporate brand value, making the involvement of female executives in top leadership positions particularly beneficial.

2.2. Digital transformation, female executives, and financial performance

Digital transformation is a driver of improved financial performance. Liu *et al.* ^[7] observed that a greater representation of women in top management teams increases inclusivity and openness to strategic change. However, female executives often exhibit characteristics such as caution, prudence, and passivity, leading them to prioritize stability and avoid high-risk strategies. As a result, they may be less inclined toward aggressive, risk-taking behaviors ^[8].

The concept of “female power” underscores the significant societal contributions of women across various domains. From this perspective, Li *et al.* ^[9] argued that female executives demonstrate resilience and perseverance, qualities honed by overcoming numerous challenges in their professional journeys. This tenacity, coupled with an enhanced awareness of risk management, enables female leaders to approach digital strategies with greater determination and tolerance for potential failure. Gersick *et al.* ^[10] highlighted that female executives are more inclined to adopt a learning-oriented approach, leveraging external social networks to overcome knowledge and experience barriers associated with digital transformation. These networks can also provide financial support, fostering mutual trust and collaboration ^[11].

Conversely, the “female dilemma” refers to the societal, economic, and familial challenges faced by women, including limitations on career advancement. Digital transformation, which fundamentally empowers

and upgrades the value creation process of enterprises, also introduces heightened risks and uncertainties^[12]. Faced with these challenges, female executives may exhibit hesitation and reluctance in adopting digital transformation strategies. Zhu *et al.*^[8] found that the presence of female directors tends to lower corporate investment levels, reflecting their propensity for risk aversion.

In summary, female executives' influence on digital transformation can yield divergent outcomes, resulting in two contrasting hypotheses regarding their impact on financial performance. The relationship between female executives and corporate digital transformation remains uncertain, as does its effect on financial performance.

H1: The proportion of female executives in the top management team has a significant positive impact on the financial performance of enterprises.

H2a: The higher the degree of digital transformation, the stronger the effect of female executives on financial performance.

H2b: The higher the degree of digital transformation, the weaker the effect of female executives on financial performance.

3. Research design

This study utilizes A-share listed enterprises from the Shanghai and Shenzhen Stock Exchanges as the research sample, covering the period from 2012 to 2023. Enterprises in the financial industry, those categorized as ST (Special Treatment), those facing insolvency, and those with missing variable data were excluded. After these exclusions, a total of 31,036 sample observations were obtained. The data for this study were sourced from the CSMAR database and subjected to winsorization to address outlier effects.

The study employs the following regression models:

(1) Regression Model 1:

(2) Regression Model 2:

where β_0 represents the constant term, ε denotes the residual term, and $\beta_1-\beta_i$ are the regression coefficients.

The definitions of variables are provided in **Table 1**.

Table 1. Variable definitions

Variable categories	Variable name	Variable symbol	Variable measure
Explained variable	Tobin's Q value	TobinQ	Market value/book value of total assets at the end of the period
Explanatory variables	Female executives	TMTfemale	Number of women on top management team/total number of top management team
Moderating variables	Degree of digital transformation	Digital	ln(number of disclosures of relevant keywords)
Control variables		Size	Natural logarithm of total assets
		CF	Net cash flow from operating activities/total assets
		Lev	Total liabilities/total assets
		Age	ln(current year - year of company listing + 1)
		Team	Number of senior management team members
	Growth		(Current year's operating income/previous year's operating income) - 1

4. Empirical results

4.1. Descriptive statistics

As shown in **Table 2**, the mean proportion of female executives (TMTfemale) within the total number of senior executives is 16.8%, with a median of 14.3%. The minimum value is 0, the maximum value is 66.7%, and the standard deviation is 15.9%, indicating that the proportion of female senior executives in listed companies remains low, failing to reach 20%. Male executives continue to represent the majority, and some companies have no female executives at all. For the variable Digital, the maximum value is 5.094, the minimum value is 0, the standard deviation is 1.397, and the mean value is 1.476, reflecting significant differences in the degree of digital transformation across enterprises. Regarding TobinQ, the mean value is 2.061, the standard deviation is 1.356, and the minimum and maximum values are 0.837 and 8.792, respectively, suggesting that the average financial performance of enterprises is at a moderate level.

Table 2. Descriptive statistics of main variables

Variable name	Observations	Mean	Standard deviation	Minimum	Median	Maximum
TobinQ	31,036	2.061	1.356	0.837	1.623	8.792
TMTfemale	31,036	0.168	0.159	0.000	0.143	0.667
Digital	31,036	1.476	1.397	0.000	1.099	5.094

4.2. Correlation analysis

The correlation coefficients for all variables are presented in **Table 3**, with none exceeding 0.5, indicating the absence of significant collinearity among the variables. Female executives exhibit a significant correlation with financial performance, providing preliminary support for **Hypothesis H1**. Additionally, the degree of digital transformation is positively correlated with financial performance, indicating that higher levels of digital transformation are associated with improved financial performance. Control variables such as company age, the number of senior executives, company size, the asset-liability ratio, and the proportion of female executives are interrelated. The correlations are generally weak to moderate, often negative, suggesting that as company size increases, so do company age and the number of directors, while the proportion of female executives decreases, highlighting the challenges women face in attaining management positions.

Table 3. Correlation coefficient matrix

	TobinQ	TMTfemale	Digital	Size	Lev	Age	Growth	CF	Team
TobinQ	1	0.11 *	0.08 *	0.53 *	0.37 *	0.20 *	0.03 *	0.08 *	0.13 *
TMTfemale	0.09 *	1	0.11 *	0.14 *	0.11 *	0.08 *	0.01	-0.01	0.09 *
Digital	0.06 *	0.10 *	1	0.05 *	0.04 *	0.05 *	0.10 *	0.03 *	0.01 *
Size	0.39 *	0.15 *	0.03 *	1	0.50 *	0.43 *	0.02 *	0.08 *	0.26 *
Lev	0.27 *	0.11 *	0.06 *	0.50 *	1	0.34 *	0.03 *	0.16 *	0.13 *
Age	0.05 *	0.07 *	0.05 *	0.40 *	0.34 *	1	0.03 *	0.03 *	-0.00
Growth	0.01 *	0.01	0.04 *	0.01	0.07 *	0.05 *	1	0.13 *	0.04 *
CF	0.09 *	-0.00	0.03 *	0.08 *	0.16 *	0.02 *	0.11 *	1	0.00
Team	0.11 *	0.12 *	0.03 *	0.28 *	0.13 *	0.00	-0.00	0.00	1

Note: *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

4.3. Empirical test

The results in Table 4 indicate that the regression coefficient for the proportion of female executives and financial performance is 0.203, with a significant positive correlation at the 5% level. This suggests that an increased proportion of female executives positively impacts financial performance. Compared to male executives, female senior managers excel in communication and teamwork, enabling companies to access more internal environmental information. Their distinct thinking and management abilities introduce innovative perspectives and approaches to decision-making, thereby enhancing financial performance. These findings align with the study by Ren *et al.* [3], validating **Hypothesis H1**.

The regression coefficient for the interaction term (TMTfemale·Digital) is -0.123, significant at the 5% level, indicating that digital transformation diminishes the positive impact of an increased proportion of female executives on enterprise performance. This finding supports **Hypothesis H2b**, suggesting that a higher degree of digital transformation may limit the positive influence of female executives.

Table 4. Empirical results

	(1)	(2)
	TobinQ	TobinQ
TMTfemale	0.203** (2.568)	0.375*** (3.300)
TMTfemale·Digital		0.123** (-2.401)
Digital		0.066*** (4.923)
Controls	Included	Included

5. Conclusions and suggestions

This study empirically concludes that female executives positively influence financial performance; however, the positive impact diminishes as the degree of digital transformation increases. Based on these findings, the following two suggestions are proposed:

- (1) Enhancing career opportunities for women: Enterprises should provide more career development opportunities for women, eliminate gender bias, and include women with strong leadership capabilities in management positions [7]. Optimizing corporate governance structures, improving team management efficiency, and fostering a supportive environment for female leaders can create significant value for enterprises.
- (2) Focus on leadership development during digital transformation: During digital transformation, enterprises should emphasize the construction and management of the top management team, particularly by cultivating and enhancing the technological innovation mindset and “digital” thinking of female executives [13]. Leveraging the unique perspectives and leadership qualities of female executives, organizations can utilize digital technology to drive research, design, production, and operational improvements, thereby enhancing both quality and efficiency.

It is important to acknowledge the limitations of this study. While there are numerous characteristics of the

top management team, such as gender, age, professional qualifications, education, career experience, tenure, and social background^[14], this study specifically focuses on the gender ratio of female executives and its impact on financial performance.

Disclosure statement

The authors declare no conflict of interest.

References

- [1] Wang T, Wang X, Feng Q, 2024, Research on the Impact of Female Executives' Participation on Enterprise Digital Transformation. *Chinese Journal of Management*, 21(8): 1163–1172.
- [2] Carter DA, Simkins BJ, Simpson WG, 2003, Corporate Governance, Board Diversity, and Firm Value. *Financial Review*, 38(1): 33–53. <https://doi.org/10.1111/1540-6288.00034>
- [3] Ren T, Wang Z, 2010, Women in Senior Management Team's Influence on Enterprise Performance: Based on the Research on China's Private Enterprises. *Journal of Nan Kai Business Review*, 13(5): 81–91.
- [4] Pfeffer J, Salancik GR, 1978, *The External Control of Organizations: A Resource Dependence Perspective*. Harper & Row, New York.
- [5] Smith N, Smith V, Verner M, 2006, Do Women in Top Management Affect Firm Performance? A Panel Study of 2,500 Danish Firms. *International Journal of Productivity and Performance Management*, 55(7): 569–593. <https://doi.org/10.1108/17410400610702160>
- [6] Helgesen S, 1995, *The Female Advantage: Women's Ways of Leadership*. Crown Publisher, New York.
- [7] Liu T, Yang Q, 2019, The Rise of "Female Strength": The Impact of Female Executive Participation on Corporate Innovation Strategy. *Economic Theory and Business Management*, 2019(8): 75–90.
- [8] Zhu J, Ye K, Yan D, 2019, Research on Female Directors' Risk Aversion and Corporate Investment Behavior: From the Perspective of Financial Crisis. *Finance & Trade Economics*, 2019(4): 50–58.
- [9] Li B, Guo J, Su K, 2017, Corporate Risk-taking: Are Daughters Inferior to Men? – An Analysis Based on CEO Gender. *Forecasting*, 36(3): 21–27 + 35.
- [10] Gersick CJG, Dutton JE, Bartunek JM, 2000, Learning From Academia: The Importance of Relationships in Professional Life. *Academy of Management Journal*, 43(6): 1026–1044. <https://doi.org/10.5465/1556333>
- [11] Song J, Chen J, 2020, The Impact of Entrepreneurs' Social Network on Enterprise Digital Construction: The Moderating Role of Strategic Flexibility. *Studies in Science of Science*, 40(1): 103–112.
- [12] Wang T, Wang X, Feng Q, 2023, Expected Performance Feedback and Enterprise Digital Transformation: Thinking of Danger in Times of Prosperity or Thinking of Change in Times of Prosperity. *Journal of Guangdong University of Finance and Economics*, 38(2): 46–59.
- [13] Wu F, Hu H, Lin H, et al., 2021, Corporate Digital Transformation and Capital Market Performance: Empirical Evidence from Stock Liquidity. *Management World*, 37(7): 130–144 + 10.
- [14] Jiang F, Yi Z, Su F, et al., 2009, Characteristics of Managers' Background and Enterprises' Overinvestment Behavior. *Management World*, 2009(1): 130–139.

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