International Journal of Management Science Research, Vol.8, Issue 5, (May)
ISSN 2536-605X **2025**
DOI: 10.53469/ijomsr.2025.08(05).11

The Impact of Digital Transformation on Greenwashing Behavior in Manufacturing Enterprises

Enhui Zhao[1,2]

[1]College of Economics & Management, South China Agricultural University, Guangzhou 510642, China
[2]Guangdong Research Center for Rural Policy, Guangzhou 510642, China

Abstract: ***Corporate greenwashing governance represents a critical step for manufacturing enterprises to achieve green transformation and sustainable development. As the core of the real economy, the high-quality development of the manufacturing sector serves as a central pathway for realizing Chinese-style modernization, where corporate digital transformation profoundly influences environmental performance, rendering the suppression of greenwashing an urgent academic and practical priority. This study investigates the impact of digital transformation on greenwashing behaviors and its mechanisms using panel data from A-share listed manufacturing enterprises on the Shanghai and Shenzhen stock exchanges (2013–2023). Methodological approaches include the Generalized Method of Moments (GMM) and instrumental variable techniques to address endogeneity, with robustness verified through variable substitution, expanded winsorization, exclusion of special administrative regions, and enhanced fixed effects. Heterogeneity analyses categorize samples by pollution intensity, regional marketization levels, and environmental regulation stringency. Results demonstrate that digital transformation significantly inhibits greenwashing behaviors, primarily through curbing managerial myopia and enhancing media scrutiny. The inhibitory effect exhibits contextual variability, showing greater efficacy in high-pollution industries, highly marketized regions, and areas with weaker environmental regulations.***

Keywords: Digital transformation; Greenwashing; Media Attention; Myopia.

1. INTRODUCTION

China condensed over a century of developed nations' urbanization, industrialization, and globalization into four decades, triggering an intense outbreak of environmental issues. As the backbone of China's modernization, manufacturing enterprises play a pivotal role in ensuring national economic security and attaining carbon neutrality goals. Nevertheless, corporate greenwashing undermines sustainable development and challenges the national green governance system. This raises a critical question: Can digital transformation reshape corporate decision - making logic to inhibit greenwashing?

Prior studies often focus on the macroscopic link between digital transformation and greenwashing across all industries, with insufficient exploration of the manufacturing sector. This study zeroes in on manufacturing enterprises, analyzing how digital transformation curbs greenwashing from the angles of managerial myopia and media attention. It dissects the mechanisms and pathways through which digital transformation impacts greenwashing. The findings offer valuable references for formulating targeted policies for the green transition of manufacturing enterprises, aiding in overcoming the dilemma of greenwashing governance under the "dual - carbon" targets.

2. RELATED WORK

With the rapid advancement of digital technologies, digital transformation has become an inevitable trend for enterprises. As fundamental components of the macroeconomic system, enterprises play a crucial role in the development and transformation of the digital economy. This transformative process is progressively reshaping corporate production practices and behavioral patterns. Current scholarly research on the drivers of enterprise digital transformation primarily examines internal and external environmental factors.

From an external environmental perspective, technological advancement constitutes the primary driver of digital transformation. Defined as "a process that aims to improve an entity by triggering significant changes in its physical attributes through integrated information, computing, communication, and connectivity technologies" [1], digital transformation has evolved from an optional strategy to an operational imperative - enterprises must either embrace digitalization or risk obsolescence [2]. Internally, digital infrastructure development enhances market

insight and collaborative innovation capabilities by reducing communication costs and stimulating innovation vitality. This technological enablement assists enterprises in improving innovation efficiency, reducing operational costs, optimizing asset utilization, and ultimately enhancing economic performance.

Research on greenwashing motivations has developed along three theoretical dimensions: institutional, communicative, and behavioral-decisional perspectives. The institutional perspective, grounded in institutional theory and legitimacy theory, emphasizes how social structures shape organizational behavior [3], focusing on compliance with institutional environments and normative pressures. The communicative approach, rooted in signaling theory, examines information asymmetry and communication efficiency challenges. Agents employ signaling mechanisms to reduce information disparities [4], where asymmetric information between consumers and enterprises may induce greenwashing [5]. The behavioral-decisional perspective integrates stakeholder theory and upper echelons theory, conceptualizing corporations as multilateral contractual networks among stakeholders [6]. Greenwashing is thus interpreted as organizational responses to stakeholder expectations [7], where enterprises adopt impression management strategies to reconcile institutional pressures and stakeholder demands.

Current academic literature exhibits limited exploration of the relationship between digital transformation and corporate greenwashing practices, with existing studies predominantly operating at macro-level analyses. Given the strategic importance of manufacturing industries in comprehensive green transition initiatives, in-depth investigation into the interaction mechanisms between digital transformation and greenwashing behaviors within manufacturing enterprises holds significant practical implications for sustainable development strategies.

3. RESEARCH HYPOTHESES

3.1 Digital Transformation and Greenwashing in Manufacturing Enterprises

Digital transformation drives manufacturing enterprises through a three-phase evolutionary progression to achieve green transition, thereby mitigating greenwashing behaviors. First, digital transformation reduces information asymmetry, diminishing the likelihood of greenwashing implementation. Digital technologies exhibit spatiotemporal compression characteristics, alleviating information disparities caused by geographical distances. Second, the application of digital technologies in manufacturing reduces resource consumption and pollution emissions, enhancing environmental performance. Finally, digital transformation fosters green innovation. Digital technologies play a pivotal role in reducing energy consumption and greenhouse gas emissions, with their adoption not only diminishing carbon footprints but also supporting economic development [8]. Based on these mechanisms, we propose:

Hypothesis 1: Digital transformation ameliorates corporate greenwashing behavior.

3.2 Digital Digital Transformation, Managerial Myopia, and Greenwashing

Myopic managers exhibit a preference for short-term, high-return projects in investment decisions, leading to reduced capital and R&D expenditures [9]. This managerial short-termism manifests in two ways: (1) resource allocation prioritizes immediate returns over visionary initiatives with delayed benefits, such as environmental responsibility and safety practices; (2) myopic executives are more inclined to resort to greenwashing when confronted with conflicts between societal-environmental demands and short-term profitability. Digital transformation enhances managerial capabilities in information acquisition, analysis, and decision-making under constrained information, while simultaneously empowering stakeholders with broader access to specialized knowledge. By improving management efficiency and internal controls, digital transformation effectively curbs short-term managerial behaviors, thereby reducing greenwashing incentives. Consequently, we propose:

Hypothesis 2: Digital transformation mitigates corporate greenwashing behavior by alleviating managerial myopia.

3.3 Digital Digital Transformation, Media Attention, and Greenwashing

Media attention, as a critical component of external corporate governance, plays a pivotal role in enforcing green transition strategies and ensuring transparent information disclosure. First, digital technologies reduce the costs of media dissemination while amplifying its reach and intensity. Heightened media exposure elevates the risk of regulatory intervention against misleading disclosures and false claims, thereby disincentivizing greenwashing

motivations. Concurrently, digital transformation intensifies media attention, subjecting enterprises to external regulatory pressures and public scrutiny. This dual mechanism reduces managerial self-serving behaviors while incentivizing proactive social responsibility fulfillment, as firms become motivated by the benefits of maintaining a positive environmental image. Consequently, enterprises are compelled to consciously avoid greenwashing practices. Consequently, we propose:

Hypothesis 3: Digital transformation ameliorates corporate greenwashing behavior through enhanced media attention.

4. DATA AND SUMMARY STATISTICS

4.1 Data Sources

Media attention, the primary data for this study were obtained from the CSMAR database. Greenwashing metrics were derived from the Bloomberg ESG database and the China Securities ESG Rating Index. Media scrutiny data were sourced from the Chinese Research Data Services Platform (CNRDS). Data processing and analysis were conducted using Excel and Stata.

4.2 Sample Selection

Following the "Industry Classification Guidelines for Listed Companies" revised by the China Securities Regulatory Commission in 2012, this study focuses on A-share manufacturing enterprises listed on the Shanghai and Shenzhen stock exchanges from 2013 to 2023. To ensure robustness, the sample underwent the following treatments:

Exclusion of companies designated as ST, ST, or SST;

Removal of samples with substantial missing data;

Winsorization of continuous variables at the 1% and 99% percentiles.

The final sample comprises 5,713 firm-year observations.

4.3 Variable Definitions

4.3.1 Dependent Variable: Greenwashing (GW)

While prior studies measured greenwashing through standardized discrepancies between Bloomberg ESG disclosure scores and Asset4 performance scores [10] or Thomson Reuters ESG metrics [11], this study adopts the China Securities ESG Rating Database to better align with Chinese institutional contexts [12]. The calculation follows Equation (1):

$$GW_{i,t} = \left(\frac{ESG_{dis_{i,t}} - \overline{ESG_{dis_{i,t}}}}{\sigma_{dis}}\right) - \left(\frac{ESG_{per_{i,t}} - \overline{ESG_{per_{i,t}}}}{\sigma_{per}}\right) \quad (1)$$

$ESG_{dis_{i,t}}$ represents ESG disclosure scores, and $ESG_{per_{i,t}}$ represents ESG performance scores. $\overline{ESG_{dis_{i,t}}}$ and $\overline{ESG_{per_{i,t}}}$ respectively represent their mean values, σ_{dis} and σ_{per} stand for their standard deviation.

4.3.2 Independent Variable: Digital Transformation (DT)

We construct a digital lexicon encompassing five technological dimensions: artificial intelligence, big data, cloud computing, blockchain, and digital applications. Through textual analysis of annual reports, we calculate the aggregate term frequency of digital keywords.

4.3.3 Control Variables

This study incorporates the following control variables: firm size (Size), book-to-market ratio (BM), board size

(Board), ownership concentration (Top3), market valuation (TobinQ), financial leverage ratio (Lev), management gender structure (Female), and collateralizable assets (Tanasset). To enhance model robustness, we implement two-way fixed effects accounting for both firm-level heterogeneity and temporal variations.

4.3.4 Mechanism Variables

(1) Managerial Myopia

We operationalize managerial myopia through textual analysis of annual reports. A lexicon of short-term orientation keywords is developed, with term frequencies extracted from Management's Discussion & Analysis (MD&A) sections. The metric is calculated as:

$$Myopia_{i,t} = \frac{Frequency\ of\ short-term\ words}{Frequency\ of\ all\ words} \times 100 \quad (2)$$

(2) Media Attention

Media attention is quantified as the natural logarithm of total media coverage (online and print publications) plus one.

Variable definitions and symbolic notations are systematically detailed in Table 1.

Table 1: Variables Definition

Variables	Code	Variable Declaration
Digital Transformation	DT	Ln(1+word frequency of annual report)
Greenwashing	GW	$GW_{i,t} = \left(\frac{ESG_{dis_{i,t}} - \overline{ESG_{dis_{i,t}}}}{\sigma_{dis}}\right) - \left(\frac{ESG_{per_{i,t}} - \overline{ESG_{per_{i,t}}}}{\sigma_{per}}\right)$
Myopia	Myopia	("short-term" word frequency/MD&A word frequency)×100
Media Attention	Media	Ln(1+total media coverage)
Firm Size	Size	The natural logarithm of total assets at the end of the year
Book-to-Market Ratio	BM	Shareholders' equity / market capitalization
Board Size	Board	The natural logarithm of the number of board members
Ownership Concentration	Top3	Shareholding ratio of the top three shareholders
TobinQ	TobinQ	Market value/total assets at the end of year
Leverage Ratio	Lev	Year-end total liabilities/Year-end total assets
Board Gender Structure	Female	Proportion of women in management
Tangible Asset	Tanasset	Tangible assets at end of year/total assets at end of year
Fixed Firm Effect	Firm	Firm dummy variables
Fixed Year Effect	Year	Year dummy variable

4.4 Model Setting

In order to test the impact of digital transformation on firms' bleaching green behavior while controlling for industry and year fixed effects, the following benchmark model is constructed with reference to existing studies:

$$GW_{i,t} = \alpha + \beta_1 DT_{i,t} + \beta_2 Controls_{i,t} + \sum Year + \sum Firm + \varepsilon_{i,t} \quad (3)$$

$GW_{i,t}$ indicate the degree of enterprises' greenwashing; $DT_{i,t}$ is the level of enterprises' digital transformation; $Controls_{i,t}$ is the ensemble of control variables; $Year$ and $Firm$ are the year fixed effects and individual fixed effects, respectively; the subscripts i and t stand for enterprises and years respectively; and $\varepsilon_{i,t}$ is the random error.

In order to deeply explore the role mechanism of digital transformation on corporate greenwash behavior, this paper proposes the second research hypothesis and the third research hypothesis respectively. In order to verify these two research hypotheses, this paper uses a two-step mediation test to analyze the role mechanism of digital transformation affecting corporate greenwashing by testing the impact of the core explanatory variable (digital transformation) on the mechanism variables (managerial myopia, media attention). Based on this, this paper constructs the following models for two different mechanism variables respectively:

$$Myopia_{i,t} = \alpha + \beta_1 DT_{i,t} + \beta_2 Controls_{i,t} + \sum Year + \sum Firm + \varepsilon_{i,t} \quad (4)$$

$$Media_{i,t} = \alpha + \beta_1 DT_{i,t} + \beta_2 Controls_{i,t} + \sum Year + \sum Firm + \varepsilon_{i,t} \quad (5)$$

where $Myopia_{i,t}$ is the first mechanism variable studied in this paper and denotes the degree of managerial shortsightedness of firm i in year t. $Media_{i,t}$ is the second mechanism variable studied in this paper and denotes the degree of media attention of firm i in year t.

5. EMPIRICAL ANALYSIS

5.1 Descriptive Statistics

Descriptive statistics for key variables are presented in Table 2 The dependent variable, GW, exhibits a mean of -0.045 with minimum and maximum values of -1.870 and 1.962, respectively. This dispersion indicates significant heterogeneity in greenwashing practices across sample firms, reflecting discrepancies between stated ESG commitments and actual environmental performance. Specifically, some firms underreport substantive sustainability achievements, while others engage in selective or misleading disclosures to inflate ESG ratings.

The core independent variable DT demonstrates a mean of 1.409, ranging from 0 to 3.689. This variation confirms divergent digital maturity levels among firms, where minimal values signify negligible digital adoption, while maximal values reflect advanced technological integration.

For mechanism variables, Myopia shows a mean of 0.099 (range: 0–0.391), evidencing substantial cross-firm differences in short-term orientation. Media displays a mean of 1.061 with values spanning 2.565 to 10.31, further corroborating significant inter-firm variability in external oversight intensity.

Table 2: Descriptive Statistics

Variables	Obs.	Mean	Std. Dev.	Min.	Max.
GW	5713	-0.045	1.034	-1.870	1.962
DT	5713	1.409	1.186	0	3.689
Media	5713	6.037	1.061	2.565	10.31
Myopia	5713	0.099	0.075	0	0.391
BM	5713	0.325	0.149	0.056	0.763
TobinQ	5713	1.953	1.050	0.929	4.820
Board	5713	2.162	0.185	1.609	2.639
Female	5713	0.074	0.064	0	0.214
Top3	5713	0.493	0.158	0.169	0.852
Tanasset	5713	0.935	0.065	0.630	0.998
Lev	5713	0.455	0.176	0.149	0.759
Size	5713	23.19	1.083	21.35	25.27

5.2 Benchmark Regression

Table 3: Benchmark Regression Results

Variables	(1) GW	(2) GW
DT	-0.054***	-0.053***
	(0.020)	(0.020)
Controls	YES	YES
Constant	-0.013	-2.200**
	(0.139)	(0.929)
N	5713.000	5713.000
R-squared	0.430	0.435
Year	YES	YES
Firm	YES	YES

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

Table 3 shows the regression results of the effect of digital transformation on firms' "greenwash". As can be seen from column (1) of the regression results, the effect of digital transformation on corporate greenwashing is

significantly negative at the 1% level when no control variables are added and both time and individual fixed effects are controlled. The regression coefficient is -0.054, indicating that every one unit increase in the level of corporate digital transformation reduces corporate greenwash by 0.054. As can be seen from column (2) of the regression results, the effect of the level of digital transformation on corporate greenwash is still significantly negative at the 1% level under the double fixed effects with the inclusion of each control variable. The first research hypothesis of this paper is validated.

5.3 Endogeneity Test

5.3.1 GMM Model

This paper introduces the lagged one-period explanatory variable L.CG as an instrumental variable, and adopts a systematic GMM approach in order to control the possible reverse causality between digital transformation and corporate greenwash. The results are shown in Table 4 column (1), the inhibitory effect of digital transformation on corporate greenwash is significant at 1% level, the p-value of AR(1) is less than 0.1, the p-value of AR(2) is more than 0.1, it can be concluded that there is no second order and higher autocorrelation of the estimated terms of the system GMM. the p-value of Hansen's test is more than 0.1, which can be seen that the instrumental variables are valid.

Table 4: Endogeneity Test Results

Variables	GMM Model	First Stage	Second Stage
	(1)GW	(2)DT	(3)GW
L.GW	0.569***		
	(16.23)		
LIV		0.037***	
		(4.14)	
DT	-0.047***		-0.619**
	(-2.71)		(-2.34)
Constant	-2.330	-3.492***	-3.640***
	(-1.03)	(-7.20)	(-3.78)
N	4,703	5,713	5,713
Controls	YES	YES	YES
Year	YES	NO	NO
Firm	YES	NO	NO
AR(1)	0.000		
AR(2)	0.469		
HansenTest	0.469		
Kleibergen-Paap rk LM		17.114	[p=0.000]
Cragg-Donald Wald F Test		16.716	16.720
Hansen J/SarganTest		0.000	0.000
R-squared			-0.446

Note: SYS-GMM models show z-values in parentheses and AR(1), AR(2) and Hansen show p-values.

5.3.2 Instrumental Variable Method

In this paper, the degree of national topographic relief is selected as an instrumental variable for enterprise digital transformation. Theoretically, the geomorphic characteristics of the enterprise location such as topographic relief will affect the installation and maintenance of digital infrastructure during the sample period, and the greater the topographic relief, the higher the corresponding cost of digital facilities laying and overhaul and maintenance, which in turn affects the level of digital transformation and meets the relevance condition; at the same time, topographic relief belongs to the topographic characteristics, which are mainly formed naturally by the crustal movement, and do not directly play a role in the enterprise's digital transformation, which meets the exogenous condition. transformation, which satisfies the condition of exogeneity. In addition, considering that the original data of instrumental variables are cross-sectional data, which cannot be directly used in the econometric analysis of panel data, a time series variable is introduced to construct panel instrumental variables. Specifically, the interaction term between the number of Internet users in the country in the previous year and the topographic relief of the firm's registered location, respectively, is used as an instrumental variable for the digitization level of the firm in that year.

Table 4 Columns (2) and (3) show the regression results after using the instrumental variables. The first stage first stage results in column (2) show that the coefficient of the instrumental variable LIV is significantly negative at the 1% level, i.e., the instrumental variables selected in this paper satisfy the correlation condition. The results of the second stage of column (3) show that the p-value of Kleibergen-Paap rk LM statistic is 0.00, which is significant at 1% level and rejects the hypothesis that the instrumental variables are under-identified. The Cragg-Donald Wald F statistic test value is greater than the critical value at 10% level, which means that the instrumental variables are not weakly instrumented variables. The Hansen (Hansen) test result of 0.00 verifies that the instrumental variable is uncorrelated with the error term. Finally, according to Column (3), the regression result of digital transformation is still significantly negative after excluding the endogeneity problem, and the previous conclusion is further verified.

5.4 Robustness Test

5.4.1 Replacement of explanatory variables

The text analysis method is used to count the frequency of digitization-related words in the four dimensions of digital technology application, Internet business model, intelligent manufacturing, and modern information system, and the natural logarithm of the total frequency of their occurrence plus 1 is used as the alternative index of enterprise digital transformation (DIGI), and regression is re-conducted. Table 5 Column (1) shows the regression results after replacing the core explanatory variables, and the level of enterprise digital transformation is significantly negative at the Table 5 Column (1) shows the regression results after replacing the core explanatory variables, the level of digital transformation of enterprises is significantly negative at the 5% level, and the benchmark regression results are robust.

Table 5: Robustness Test Results

Variables	(1) GW	(2) GW	(3) GW	(4) GW
DIGI	-0.046**			
	(0.023)			
DT		-0.045**	-0.099***	-0.040**
		(0.020)	(0.030)	(0.020)
Controls	YES	YES	YES	YES
Constant	-1.751*	-1.727*	-0.732	-1.886*
	(0.949)	(0.987)	(1.604)	(1.053)
N	5713.000	5713.000	2317.000	5713.000
R-squared	0.439	0.439	0.420	0.445
Year	YES	YES	YES	YES
Firm	YES	YES	YES	YES
City	NO	NO	NO	YES

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

5.4.2 Expanding the range of shrinking tails

The samples are bilaterally 5% shrink-tailed using the winsor2 command in Stata18 to avoid the impact of outliers on a larger scale on the study of this paper. Table 5 column (2) reports the regression results, with the regression coefficient of digital transformation being -0.045, which is significantly negative at the 5% level. This shows that an increase in the level of digital transformation of a firm leads to a reduction in the level of greenwash and the conclusions of the previous paper are robust.

5.4.3 Excluding the effect of special regions

The China Digital Economy Development Index Report (2024) released by the Ministry of Industry and Information Technology shows that 10 provinces and cities, including Beijing, Guangdong, as well as Shanghai, are ranked in the first echelon by virtue of their higher overall digital economy indexes. In order to verify the impact of regional digital development level on the conclusion, this paper excludes the regions in the first tier, and then re-estimates the baseline model. column (3) of Table 5 shows the empirical results after excluding the impact of special regions. The estimated coefficients on the level of firms' digital transformation remain significantly negative, again validating the basic conclusions of this paper.

5.4.4 Adding Fixed Effects

In order to mitigate the interference caused by the factors at the regional level, this paper further controls for the fixed effects at the level of the prefecture-level city where the enterprise is registered. The estimation results in column (4) of Table 5 show that the regression results do not change much after adding the fixed effects, which suggests that the findings of the previous study are robust.

5.5 Heterogeneity Analysis

5.5.1 Degree of pollution

The dummy variable takes the value of 1 when the enterprise belongs to a heavily polluted industry (Pollute), otherwise it is 0. The results in Table 6 column (1) show that the DT coefficient is significantly negative at the 5% level, indicating that the inhibiting effect of digital transformation on the enterprise's greenwash behavior is more pronounced in heavily polluted industries.

Table 6: Results of Heterogeneity Analysis

Variables	(1) Pollute	(2) Pollute	(3) Marketization	(4) Marketization	(5) Environmental Regulation	(6) Environmental Regulation
	High	Low	High	Low	High	Low
DT	-0.070**	-0.030	-0.070**	-0.019	-0.046	-0.061*
	(0.031)	(0.026)	(0.031)	(0.029)	(0.028)	(0.033)
Controls	YES	YES	YES	YES	YES	YES
Constant	-2.675*	-0.845	0.051	-3.682***	-1.814	-2.332
	(1.554)	(1.248)	(1.574)	(1.352)	(1.317)	(1.785)
N	2479	3234	2718	2995	3340	2373
R-squared	0.418	0.462	0.507	0.470	0.493	0.522
Year	YES	YES	YES	YES	YES	YES
Firm	YES	YES	YES	YES	YES	YES

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

5.5.2 Level of Marketization

The marketization index of the firm's province is used to measure the level of development of the regional market economy, and the dummy variable Market is taken as 1 if the index is higher than the median of the sample, otherwise it is 0. The results in Table 6, column (3), show that the coefficient of digital transformation is significantly negative at the 5% level, suggesting that the higher the degree of marketization of the region where the firm is located, the stronger the role of digital transformation in improving firms' drifting green.

5.5.3 Environmental regulation

The frequency of words related to the term "environmental protection" in the local government's work report as a proportion of the number of words in the full text of the report is used as a proxy variable for environmental regulation, and the sample is divided into two groups of strong and weak environmental regulation using the median as the benchmark. The estimation results are shown in Table 6, columns (5) and (6), and it can be found that the inhibiting effect of digital transformation on enterprises' "greenwashing" behaviors mainly exists in regions with weaker environmental regulations.

5.6 Mechanism Test

5.6.1 Managerial myopia

After the theoretical analysis in Chapter 3, this paper puts forward the second research hypothesis that digital transformation can mitigate managerial myopia and thus inhibit corporate "greenwashing". In this section, we test hypothesis 2 based on the model (4) constructed above, and the regression results are shown in Table 7, column (1).

Table 7: Mechanism analysis test results

Variables	(1) Myopia	(2) Media
DT	-0.252**	0.025**
	(0.128)	(0.011)
Controls	YES	YES
Constant	-3.718	1.668***
	(5.941)	(0.646)
N	5713.000	5713.000
R-squared	0.564	0.825
Year	YES	YES
Firm	YES	YES

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

First, the impact of digital transformation on firms' greenwash has been tested in the "benchmark regression" section, and the results show that the higher the level of digital transformation, the lower the degree of firms' greenwash. Second, column (1) of Table 7 shows that the coefficient of digital transformation is significantly negative at the 5% level. This suggests that digital transformation can inhibit corporate greenwashing by mitigating managerial myopia.

5.6.2 Media Attention

After the theoretical analysis in Chapter 3, this paper proposes the third research hypothesis that digital transformation can inhibit corporate "greenwash" by increasing media attention. In this section, we test the H3 hypothesis based on the model (5) constructed above, and the regression results are shown in Table 7, column (2).

First, the effect of digital transformation on corporate greenwash has already been tested in section 5.2 Benchmark Regression. Second, column (2) of the regression results in Table 5-5 shows that the coefficient of digital transformation is significantly positive at the 5% level. It indicates that digital transformation can inhibit corporate greenwash by enhancing the level of media attention.

6. CONCLUSIONS

Digital transformation can effectively inhibit corporate "greenwashing". The regression results after adding control variables, fixed time and individual enterprises show that digital transformation is significantly negatively correlated with the degree of greenwashing, which verifies the basic conjecture of this paper. Digital transformation can inhibit "greenwashing" by improving managerial myopia. Digital transformation can increase media attention, which in turn inhibits "greenwashing". In the heterogeneity analysis, pollution degree, marketization degree and environmental regulation are discussed in groups. Specifically, when grouped by industry pollution characteristics, the inhibitory effect of digital transformation on corporate greenwashing is more significant in heavily polluted industries. When grouped by the degree of marketization, the effect of digital transformation on greenwash is significantly negative in areas with high marketization, while the relationship is not significant in areas with low marketization. When grouped by environmental regulation, digital transformation significantly inhibits greenwashing in weak environmental regulation regions compared to strong environmental regulation regions.

The findings of this paper can provide some policy recommendations for the management of "greenwashing" behavior of manufacturing enterprises in the digital economy era: First, the government should build a national unified ecological and environmental data platform to ensure that the public can obtain real and effective corporate environmental information in a timely manner, and to reduce the cost of verifying the information. At the same time, it should encourage manufacturing enterprises to promote digital change by introducing a special subsidy policy for digital transformation, and provide low-cost green technology services for SMEs that lack technical support. Second, diversity should be emphasized in the selection of management members, favoring those with backgrounds in digital transformation and sustainable development. And digital technology should be fully utilized to help management identify technology trends and policy directions that may have been overlooked.

REFERENCES

[1] Drechsler K, Gregory R, Wagner H T, et al. At the crossroads between digital innovation and digital transformation[J]. Communications of the Association for Information Systems, 2020, 47(1): 23.
[2] Kowalkiewicz M, Safrudin N, Schulze B. The business consequences of a digitally transformed economy[J]. Shaping the digital enterprise: Trends and use cases in digital innovation and transformation, 2017: 29-67.
[3] DiMaggio P J, Powell W W. The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields[J]. American sociological review, 1983, 48(2): 147-160.
[4] Berrone P, Fosfuri A, Gelabert L. Does greenwashing pay off? Understanding the relationship between environmental actions and environmental legitimacy[J]. Journal of Business Ethics, 2017, 144: 363-379.
[5] Garrido D, Espínola-Arredondo A, Munoz-Garcia F. Can mandatory certification promote greenwashing? A signaling approach[J]. Journal of public economic theory, 2020, 22(6): 1801-1851.
[6] Freeman R E, Evan W M. Corporate governance: A stakeholder interpretation[J]. Journal of behavioral economics, 1990, 19(4): 337-359.
[7] Brunsson N. The consequences of decision-making[M]. Oxford University Press, 2007.
[8] Lahouel B B, Taleb L, Zaied Y B, et al. Does ICT change the relationship between total factor productivity and CO2 emissions? Evidence based on a nonlinear model[J]. Energy Economics, 2021, 101: 105406.
[9] Ma Y, Tao P. A Perspective on Management Myopia: The Impact of Digital Transformation on Carbon Emission Intensity[J]. Sustainability, 2023, 15(12): 9417.
[10] Yu E P, Van Luu B, Chen C H. Greenwashing in environmental, social and governance disclosures[J]. Research in International Business and Finance, 2020, 52: 101192.
[11] Amores-Salvadó J, Martin-de Castro G, Albertini E. Walking the talk, but above all, talking the walk: Looking green for market stakeholder engagement[J]. Corporate Social Responsibility and Environmental Management, 2023, 30(1): 431-442.
[12] Zhang D. Does green finance really inhibit extreme hypocritical ESG risk? A greenwashing perspective exploration[J]. Energy Economics, 2023, 121: 106688.