

Corporate Digital Transformation and Information Disclosure Quality: An Empirical Study Based on Shenzhen Stock Exchange Disclosure Evaluation Data

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ABSTRACT Using A-share listed firms on the Shenzhen Stock Exchange from 2015 to 2020 as the research sample, this paper examines the impact of corporate digital transformation on information disclosure quality. The results show that corporate digital transformation can significantly improve firms' information disclosure quality. Mechanism tests indicate that digital transformation improves disclosure quality through two channels: reducing earnings management and improving internal control quality. Compared with blockchain technology, four digital transformation modes, namely artificial intelligence, cloud computing, big data, and digital technology application, have more significant effects on improving information disclosure quality. In addition, the higher the degree of analyst coverage, the stronger the positive effect of corporate digital transformation.

INDEX TERMS corporate digital transformation; information disclosure quality; real earnings management; internal control quality; heterogeneity analysis

I. INTRODUCTION

The quality of information disclosure by listed companies affects the operating efficiency of the capital market and is an important guarantee for its healthy development. The *Code of Corporate Governance for Listed Companies* issued by the China Securities Regulatory Commission clearly requires listed companies to improve governance mechanisms, disclose information in accordance with relevant laws and regulations, and effectively safeguard the lawful rights and interests of shareholders and other stakeholders. The *Company Law of the People's Republic of China* and the *Securities Law of the People's Republic of China* also impose strict requirements on the production and disclosure of accounting information to ensure its completeness, accuracy, and authenticity. In practice, however, serious information quality problems still exist, and financial fraud cases continue to occur, often producing broad and harmful consequences. In recent years, a number of fraud cases have seriously harmed investors and impaired the healthy development of the capital market, thereby drawing wide public attention.

At the same time, as firms face increasingly complex external environments and greater uncertainty in production and operations, users of financial reports place ever higher demands on the quality of disclosed information. How to ensure information disclosure quality and protect the lawful rights and interests of stakeholders has therefore become a central concern.

Meanwhile, with the further development of China's digital economy, its scale has continued to expand. It has become not only a new driving force for economic growth but also a source of major transformation for corporate development. Digital economy-related industries have gradually become new areas and new drivers for rapid corporate growth. They help firms reduce costs and increase efficiency, promote product upgrading, improve the precision and effectiveness of management, and generate greater economic benefits. Qi Huaijin et al. (2020) argue that the digital economy has also demonstrated governance effects at the micro-firm level [1]. This raises an important question: does corporate digital transformation have a positive impact on information disclosure quality?

Existing studies on the determinants of information disclosure quality mainly focus on three levels. The first is the external environment, including macroeconomic fluctuations [2], regulatory measures [3-4], and analyst attention [5]. The second is the firm level, including board characteristics [6], internal control quality [7], and ownership structure [8]. The third is the executive level, including the characteristics of the management team as a whole [9], as well as the individual characteristics of CEOs, CFOs, and board secretaries [10-11]. Previous research has examined many antecedents of information disclosure quality from multiple perspectives and levels, but has paid relatively little attention to whether corporate digital transformation itself can affect disclosure quality. Although the existing literature has actively discussed digital transformation, most findings remain at the theoretical level [12-13], and empirical evidence is still limited.

To clarify the relationship between corporate digital transformation and information disclosure quality and to further verify the positive governance effects of digital transformation at the firm level, this paper uses A-share listed firms on the Shenzhen Stock Exchange from 2015 to 2020 as the research sample. It empirically examines the relationship between the two, further analyzes the underlying mechanisms, and explores heterogeneity under different conditions, with the aim of identifying concrete ways to improve information disclosure quality, refining the relevant theoretical framework, and better meeting financial statement users' demands for high-quality information.

II. THEORETICAL ANALYSIS AND HYPOTHESIS DEVELOPMENT

From the perspective of information asymmetry, corporate digital transformation helps optimize the process of information transmission and disclosure, reduce managers' earnings manipulation, make information more open and transparent, and reduce internal and external information asymmetry. In the process of digital transformation, firms inevitably adopt technologies such as artificial intelligence, big data, blockchain, and cloud computing. These advanced digital technologies improve the efficiency of information transmission, strengthen internal and external information connectivity, and help firms communicate more effectively with outside stakeholders, thereby improving information disclosure quality.

From the perspective of information senders, digital transformation undoubtedly increases the transparency of internal corporate information, reduces the possibility that managers can hide information, and places implicit pressure on potential managerial self-interest, thereby encouraging management to fulfill its duties diligently and ensure the authenticity and accuracy of corporate information. The use of digital technologies also allows regulators and stakeholders to employ data analytics to identify firms' true earnings information, which puts managers under greater scrutiny. Under such circumstances, earnings manipulation is more likely to be detected. Out of concern for risk avoidance and reputation maintenance, managers have stronger incentives to ensure the reliability of accounting information, reduce earnings management, and improve information disclosure quality.

From the perspective of information transmission, digital technologies reduce loss in the transmission process, lower noise and other disruptive factors, and improve the quality of transmitted information, thereby helping ensure the completeness and authenticity of disclosure. In particular, the use of digital platforms such as Weibo and Douyin can improve the timeliness and reliability of accounting information disclosure.

From the perspective of information recipients and users, the connectivity and sharing functions of the internet and big data reduce the difficulty of interpreting accounting information, allowing disadvantaged stakeholders to quickly obtain the information they need through professional interpretation and thereby better supervise management's fulfillment of its responsibilities. Digital technologies also reduce the cost of obtaining relevant information, enabling stakeholders to use digital resources to monitor corporate disclosure behavior more effectively.

From the perspective of corporate governance, internal control is an important governance mechanism. High-quality internal control can effectively improve information disclosure quality, remedy internal control deficiencies, and improve governance mechanisms. Internal control includes five elements: control environment, information and communication, risk assessment, control activities, and monitoring. One of its goals is to ensure the accuracy and reliability of accounting information. As a new driving force, corporate digital transformation improves risk identification and evaluation through digital technology, allowing firms to prevent problems before they occur, identify risk factors earlier, and strengthen risk control capabilities. It also helps firms identify and correct deficiencies in their internal control systems and build more rational and complete internal systems. In a complex and rapidly changing environment, digital technologies provide large amounts of high-quality information that allow firms to make rapid decisions and judgments, thereby facilitating the implementation and execution of internal control.

Digital transformation also improves the information and communication component of internal control, promotes information transmission among stakeholders, and reduces the likelihood of irrational managerial decisions. At the same time, firms can obtain internal control information from peer firms through digital technologies, learn from it, identify their own internal control weaknesses, and make timely adjustments. Digital technologies also improve internal monitoring and early warning within the firm, enabling it to identify and respond to problems in time and thereby increasing the flexibility of governance mechanisms. Therefore, digital transformation helps improve internal control quality, which in turn guarantees information disclosure quality.

In summary, corporate digital transformation can optimize information transmission, reduce managerial opportunism, and improve corporate transparency. At the same time, it enhances internal control quality and thereby improves information disclosure quality. Based on the above analysis, this paper proposes the following hypothesis:

H1: Corporate digital transformation can significantly improve firms' information disclosure quality. In other words, the higher the degree of digital transformation, the better the information disclosure quality.

III. RESEARCH DESIGN

A. VARIABLE DEFINITIONS

1) Dependent Variable

Information disclosure quality (*Quality*) is measured using the information disclosure assessment results of A-share listed firms on the Shenzhen Stock Exchange. The assessment has four levels: A for excellent, B for good, C for qualified, and D for unqualified. Using an assignment method, A, B, C, and D are assigned values of 4, 3, 2, and 1, respectively. A larger value indicates better information disclosure quality.

2) Explanatory Variable

Corporate digital transformation (*Digital*) is measured using the total frequency of digital transformation-related keywords in listed firms' annual reports. Existing studies lack a unified standard for measuring digital transformation, and each approach has limitations. For example, He Fan and Liu Hongxia (2019) use a dummy variable indicating whether digital transformation occurred in a given year [15]; Qi Huaijin et al. (2020) and Zhang Yongshen et al. (2021) use the proportion of data assets in year-end intangible assets [1,16]; and Wu Fei et al. (2021) adopt the now widely used quantitative approach of extracting digital transformation-related vocabulary from annual reports and using the total frequency of such words to measure digital transformation [17]. To reduce bias, this paper adopts the widely used text analysis method and uses word frequencies as the measure of corporate digital transformation.

Following Wu Fei et al. (2021) [17], digital transformation keywords are divided into five categories: artificial intelligence technology, blockchain technology, cloud computing technology, big data technology, and digital technology application. Keywords from these five categories are searched, matched, and counted in listed firms' annual reports, and then summed to obtain the total keyword frequency. To reduce the influence of right-skewness, the word-frequency data are logarithmically transformed.

3) Control Variables

In addition to the degree of digital transformation, several firm characteristics may affect information disclosure quality. Drawing on the existing literature, this paper controls for firm size (*Size*), profitability (*ROA*), financial leverage (*Lev*), board size (*Board*), firm growth (*Growth*), board independence (*Idr*), CEO-chair duality (*Dual*), ownership concentration (*Top1*), Big Four auditing (*Big4*), and ownership nature (*S0E*).

Table 1. Main Variable Definitions

Variable Name	Symbol	Description
Information disclosure quality	<i>Quality</i>	Shenzhen Stock Exchange information disclosure evaluation result
Corporate digital transformation	<i>Digital</i>	Logarithm of the total keyword frequency of digital transformation
Firm size	<i>Size</i>	$\ln(\text{total assets at year-end})$
Ownership concentration	<i>Top1</i>	Shareholding ratio of the largest shareholder
Profitability	<i>ROA</i>	Net profit / total assets at year-end
Board size	<i>Board</i>	Logarithm of the number of board members
Firm growth	<i>Growth</i>	$(\text{current operating revenue} / \text{previous operating revenue}) - 1$
Financial leverage	<i>Lev</i>	Total liabilities at year-end / total assets at year-end
Board independence	<i>Idr</i>	Ratio of independent directors to total board members
CEO-chair duality	<i>Dual</i>	Equals 1 if the chairman also serves as general manager; otherwise 0
Big Four auditor	<i>Big4</i>	Equals 1 if the audit firm is one of the international Big Four; otherwise 0
Ownership nature	<i>S0E</i>	Equals 1 for state-owned controlling firms; otherwise 0
Earnings management	<i>REM</i>	Measured using real earnings management
Internal control quality	<i>IC</i>	Logarithm of the DIB internal control index

B. MODEL SPECIFICATION

To test the effect of corporate digital transformation (*Digital*) on information disclosure quality (*Quality*), the following model is specified:

$$Quality_{it} = \alpha_0 + \alpha_1 Digital_{it} + \alpha_2 Control_{it} + \sum Year + \sum Industry + \varepsilon_{it}$$

In the model, *Quality* denotes information disclosure quality as measured by the Shenzhen Stock Exchange evaluation, with larger values indicating better quality. Because the dependent variable is an ordered categorical variable, ordered logistic regression is used. If Hypothesis H1 holds, the coefficient α_1 should be significantly positive. To reduce bias arising from firm characteristics, a set of control variables is included, and both year and industry fixed effects are controlled for.

To further examine the transmission mechanisms through which corporate digital transformation affects information disclosure quality, this paper follows Wen Zhonglin et al. (2004) [18] and uses the stepwise mediation testing approach:

$$Quality_{it} = \alpha_0 + \alpha_1 Digital_{it} + \alpha_2 Control_{it} + \sum Year + \sum Industry + \varepsilon_{it}$$

$$Med_{it} = \alpha_0 + \alpha_1 Digital_{it} + \alpha_2 Control_{it} + \sum Year + \sum Industry + \varepsilon_{it}$$

$$Quality_{it} = \alpha_0 + \alpha_1 Digital_{it} + \alpha_2 Med_{it} + \alpha_3 Control_{it} + \sum Year + \sum Industry + \varepsilon_{it}$$

Model (2) verifies the relationship between digital transformation and information disclosure quality. If H1 holds, α_1 should be significantly positive. In Model (3), *Med* denotes the mediating variable. A significant α_1 is a necessary condition. In Model (4), both the explanatory variable and the mediating variable are included. If α_2 is significant and α_1 remains significant, a mediating effect exists. A further Sobel test is then used to verify the mediation effect.

C. DATA SOURCES

This paper uses A-share listed firms on the Shenzhen Stock Exchange from 2015 to 2020 as the initial research sample. Since the Shenzhen Stock Exchange only evaluates the information disclosure quality of firms listed on that exchange, the research sample is restricted accordingly. After processing, 8,029 valid observations remain.

To improve the reliability of the results, the sample is processed as follows: financial and insurance firms are excluded to avoid the influence of special industries; observations with missing data are excluded; ST and other specially treated firms are excluded because continuously loss-making firms may distort the results; and all continuous variables are winsorized at the 1% and 99% levels. Information disclosure assessment data come from the Shenzhen Stock Exchange, internal control data come from the Shenzhen DIB internal control and risk management database, and all other data come from the CSMAR database.

IV. EMPIRICAL RESULTS

A. DESCRIPTIVE STATISTICS

The descriptive statistics are shown in Table 2.

Table 2. Descriptive Statistics

Variable	N	Mean	SD	Min	Median	Max
Quality	8029	3.055	0.627	1.000	3.000	4.000
Digital	8029	1.700	1.482	0.000	1.386	5.159
Size	8029	22.089	1.079	20.069	21.989	25.383
Lev	8029	0.398	0.191	0.065	0.387	0.860
ROA	8029	0.038	0.070	-0.255	0.040	0.214
Growth	8029	0.378	0.874	-0.701	0.164	6.098
Dual	8029	0.339	0.473	0.000	0.000	1.000
Board	8029	2.096	0.191	1.609	2.197	2.565
Idr	8029	0.378	0.054	0.333	0.364	0.571
Top1	8029	0.315	0.131	0.092	0.296	0.674
Big4	8029	0.033	0.178	0.000	0.000	1.000
SOE	8029	0.218	0.413	0.000	0.000	1.000

As Table 2 shows, the dependent variable *Quality* has a mean of 3.055, a standard deviation of 0.627, and a median of 3, indicating that most firms achieve a "good" level of information disclosure quality. The explanatory variable *Digital* has a mean of 1.7, a standard deviation of 1.482, a maximum of 5.159, and a minimum of 0, indicating substantial differences in the degree of digital transformation across firms. In addition, the descriptive statistics of the control variables are broadly consistent with prior studies and fall within reasonable ranges.

B. BASELINE REGRESSION

The regression results for corporate digital transformation and information disclosure quality are shown in Table 3.

Table 3. Regression Results for Corporate Digital Transformation and Information Disclosure Quality

Variable	(1) Quality	(2) Quality	(3) Quality
Digital	0.089*** (4.83)		0.098*** (5.09)
Size		0.432*** (14.53)	0.413*** (13.71)
Lev		-1.796*** (-10.68)	-1.765*** (-10.47)
ROA		10.769*** (26.05)	10.846*** (26.23)
Growth		-0.039 (-1.40)	-0.048* (-1.71)
Dual		-0.029 (-0.54)	-0.044 (-0.82)
Board		0.594*** (3.47)	0.579*** (3.37)
Idr		0.803 (1.40)	0.718 (1.25)
Top1		1.623*** (8.73)	1.661*** (8.90)
Big4		-0.083 (-0.61)	-0.054 (-0.40)
SOE		0.558*** (8.47)	0.587*** (8.87)
Year/Industry	Controlled	Controlled	Controlled
N	8029	8029	8029
Pseudo R^2	0.0083	0.1319	0.1337

All models control for year and industry fixed effects. Column (1) reports the regression with only the explanatory variable and no controls. The coefficient on digital transformation is significantly positive at the 1% level, providing preliminary support for H1. Column (2) includes only control variables. Column (3) includes both the explanatory variable and the control variables. The coefficient on Digital is 0.098 and remains significantly positive at the 1% level. Comparing Columns (1) and (3), the results support H1: corporate digital transformation significantly improves information disclosure quality.

Among the control variables, firm size, profitability, board size, ownership concentration, and state ownership all have significantly positive coefficients at the 1% level, suggesting that firms with larger scale, stronger profitability, larger boards, more concentrated ownership, and state ownership tend to have better disclosure quality. By contrast, leverage has a significantly negative coefficient at the 1% level, implying that firms with higher financial leverage tend to have relatively lower information disclosure quality.

C. ROBUSTNESS AND ENDOGENEITY TESTS

The results of the robustness and endogeneity tests are shown in Table 4.

Table 4. Robustness and Endogeneity Test Results

Variable	(1) OLS	(2) Replace X	(3) Replace Y	(4) Subsample	(5) PSM	(6) t+1 Y
Digital	0.026*** (5.25)		-0.133*** (-3.03)	0.103*** (4.55)	0.079*** (2.95)	0.086*** (3.81)
digital		0.485*** (3.48)				
Constant	0.290 (1.45)	-3.542** (-1.97)				
Controls	YES	YES	YES	YES	YES	YES
Year/Industry	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled
N	8029	8029	5010	5894	4349	6022
Adj. R^2	0.2254	0.0731				
Pseudo R^2			0.1328	0.1404	0.1362	0.1388

First, to eliminate potential model specification bias, this paper uses OLS regression as a robustness check. Column (1) shows that the coefficient on Digital is 0.026 and significantly positive at the 1% level, consistent with the baseline regression.

Second, to reduce measurement error, the paper follows Qi Huaijin et al. (2020) [1] and uses the proportion of data assets in year-end intangible assets as an alternative proxy for digital transformation (digital). Column (2) shows that the coefficient remains significantly positive, indicating that the main conclusion is robust to alternative measurement of the explanatory variable.

Third, the paper replaces the dependent variable with earnings disclosure quality. Following Bhattacharya et al. (2003) [19], earnings disclosure quality is measured by the arithmetic mean of standardized earnings aggressiveness and earnings smoothing. A smaller value indicates higher earnings disclosure quality, while a larger value indicates lower quality. Column (3) shows that the coefficient on digital transformation is -0.133 and significantly negative at the 1% level, indicating that higher digital transformation is associated with better earnings disclosure quality. This strengthens the robustness of the conclusion.

Fourth, to reduce sample selection bias, the paper re-estimates the model using the 2017-2020 subsample after excluding 2015-2016 observations. Column (4) shows that the coefficient remains significantly positive.

Fifth, to address endogeneity caused by sample selection, propensity score matching (PSM) is employed. Firms with digital transformation above the median are treated as the treatment group, while those below the median form the control group. Nearest-neighbor matching is conducted using the existing control variables to estimate the propensity scores. Balance tests show that the Bias values of the control variables are all below 10%, indicating that the matched sample passes the balance test. Column (5) shows that the coefficient on digital transformation remains significantly positive after matching.

Finally, to mitigate possible reverse causality, the paper uses the t+1 period dependent variable. Column (6) shows that the coefficient remains significantly positive at the 1% level, indicating that the conclusion is robust to this endogeneity concern as well.

V. FURTHER ANALYSIS

A. MECHANISM ANALYSIS

The results of the mechanism tests are shown in Table 5.

Table 5. Mechanism Tests

Variable	(1) Quality	(2) REM	(3) Quality	(4) Quality	(5) IC	(6) Quality
Digital	0.094*** (4.73)	-0.009*** (-3.80)	0.091*** (4.50)	0.101*** (5.17)	0.045*** (5.21)	0.089*** (4.48)
REM			-0.429** (-2.49)			
IC						0.393*** (13.95)
Constant	-0.235*** (-3.20)		5.464*** (13.08)			
Controls	YES	YES	YES	YES	YES	YES
Year/Industry	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled
N	7452	7452	7452	7742	7742	7742
Adj. R^2		0.108			0.064	
Pseudo R^2	0.1364		0.1373	0.1310		0.1493

1) The Role of Earnings Management

As argued above, corporate digital transformation helps optimize information transmission and disclosure, reduce managerial earnings manipulation, improve transparency, and reduce information asymmetry. Advanced digital technologies enhance transparency, reduce managers' ability to hide information, improve transmission efficiency, and strengthen the link between internal and external information, thereby improving information disclosure quality.

Following prior studies, this paper uses real earnings management (REM) as the mediating variable capturing managerial earnings manipulation. Drawing on Roychowdhury (2006) [20], it computes a firm-level real earnings management index, where a larger value indicates more intensive earnings manipulation.

Table 5 shows that when REM is used as the mediating variable, Column (1) indicates that the coefficient on digital transformation is significantly positive at the 1% level, consistent with the baseline regression. Column (2) shows that digital transformation significantly reduces real earnings management at the 1% level. Column (3) further shows that digital transformation remains significantly positive while REM is significantly negative at the 5% level, indicating a mediating effect. The Sobel test is also significant at the 1% level. Thus, corporate digital transformation improves information disclosure quality by restraining real earnings management.

2) The Role of Internal Control Quality

As discussed in the theoretical analysis, digital transformation improves risk identification and assessment, enables earlier detection of risk factors, strengthens firms' risk-control capabilities, and helps firms identify and correct internal control weaknesses, thereby improving governance mechanisms and safeguarding information disclosure quality.

This paper therefore uses internal control quality (IC) as another mediating variable. IC is measured using the internal control index published by the Shenzhen DIB database and then logarithmically transformed. Column (4) of Table 5 shows that the coefficient on digital transformation remains significantly positive at the 1% level. Column (5) shows that when internal control quality is used as the dependent variable, the coefficient on digital transformation is 0.045 and significantly positive at the 1% level, indicating that digital transformation improves internal control quality. Column (6) shows that the coefficient on internal control quality is 0.393 and significantly positive at the 1% level, indicating that better internal control quality improves information disclosure quality. The Sobel test is also significant at the 1% level. These results indicate that corporate digital transformation improves information disclosure quality by improving internal control quality.

B. HETEROGENEITY ANALYSIS

1) Different Types of Corporate Digital Transformation

To better examine the governance effect of corporate digital transformation, and following Wu Fei et al. (2021) [17], this paper divides digital transformation into five categories: artificial intelligence (AI), blockchain (Block), cloud computing (Cloud), big data (Bigdate), and digital technology application (DT). The logarithm of the keyword frequency for each category is used as the explanatory variable. The regression results are shown in Table 6.

Table 6. Regression Results for Different Types of Digital Transformation

Variable	(1) Quality	(2) Quality	(3) Quality	(4) Quality	(5) Quality
AI	0.156*** (5.03)				
Block		0.199 (1.62)			
Cloud			0.134*** (5.33)		
Bigdate				0.082*** (2.95)	
DT					0.060*** (2.63)
Controls	YES	YES	YES	YES	YES
Year/Industry	Controlled	Controlled	Controlled	Controlled	Controlled
N	8029	8029	8029	8029	8029
Pseudo R^2	0.1336	0.1321	0.1339	0.1325	0.1324

Table 6 shows that the coefficients on artificial intelligence, cloud computing, big data, and digital technology application are all significantly positive at the 1% level, indicating that these forms of digital transformation significantly improve information disclosure quality. By contrast, the coefficient on blockchain technology is not significant, suggesting that its disclosure-improving effect is not obvious. Therefore, compared with blockchain technology, artificial intelligence, cloud computing, big data, and digital technology application exert stronger positive effects on information disclosure quality.

2) Analyst Attention

Analyst attention promotes the positive flow of information between firms and the capital market, provides investors with higher-quality information, and reduces internal and external information asymmetry. The presence of analysts also makes managers more cautious. To preserve reputation and avoid risk, managers are more likely to disclose financial information truthfully and diligently, thereby improving information disclosure quality. Under high analyst attention, firms engaging in digital transformation are more inclined to improve information communication technologies and make corporate information more open and transparent.

Based on the annual industry median of analyst coverage, the sample is divided into high and low analyst-attention groups. The grouped regression results are shown in Table 7.

Table 7. Heterogeneity Analysis by Analyst Attention

Variable	(1) High analyst attention	(2) Low analyst attention
Digital	0.093*** (2.93)	0.034 (1.00)
Size	0.366*** (6.69)	0.136** (2.40)
Lev	-1.445*** (-4.58)	-1.768*** (-6.11)
ROA	10.611*** (12.18)	8.921*** (12.83)
Growth	-0.064 (-1.07)	-0.019 (-0.45)
Dual	-0.157* (-1.75)	-0.004 (-0.04)
Board	0.084 (0.30)	1.199*** (4.22)
Idr	0.631 (0.69)	1.781* (1.84)
Top1	1.655*** (5.27)	2.146*** (6.49)
Big4	-0.107 (-0.55)	0.218 (0.89)
SOE	0.699*** (6.16)	0.824*** (7.15)
Year/Industry	Controlled	Controlled
N	2666	2953
Pseudo R^2	0.1045	0.1000

Table 7 shows that in the high analyst-attention group, the coefficient on digital transformation is significantly positive at the 1% level, whereas in the low analyst-attention group the coefficient is not significant. This suggests that when analyst attention is high, corporate digital transformation has a stronger positive effect on information disclosure quality.

VI. CONCLUSIONS AND IMPLICATIONS

A. CONCLUSIONS

To further verify the positive role of corporate digital transformation at the micro-firm level, this paper uses A-share listed firms on the Shenzhen Stock Exchange from 2015 to 2020 to examine the impact of digital transformation on information disclosure quality and to identify possible mechanisms linking the two.

The study finds that corporate digital transformation can significantly improve firms' information disclosure quality. Mechanism tests show that digital transformation enhances information disclosure quality through two channels: reducing earnings management and improving internal control quality. After distinguishing among different types of digital transformation, the

paper further finds that, compared with blockchain technology, four types of digital transformation, namely artificial intelligence, cloud computing, big data, and digital technology application, have more significant positive effects on information disclosure quality. It is also found that the higher the degree of analyst attention, the stronger the improving effect of digital transformation on information disclosure quality. After conducting multiple robustness and endogeneity tests, the conclusions remain robust.

B. IMPLICATIONS

For firms themselves, digital transformation reduces the possibility that management can hide information, improves the efficiency of information transmission, strengthens internal and external information connectivity, and ultimately reduces internal and external information asymmetry. At the same time, digital transformation helps remedy internal control deficiencies, improve governance mechanisms, and enhance governance quality. Firms should therefore recognize the positive role of digital transformation, accelerate the pace of digital transformation, and promote transformation modes centered on artificial intelligence, cloud computing, big data, and digital technology application so as to increase the degree of digital transformation.

Regulators should make full use of the advantages of digital technologies to supervise firms' information disclosure practices. For more concealed and harmful behaviors, such as real earnings management, regulators should better use digital resources and digital technologies for monitoring. In addition, regulators should encourage and guide firms to carry out digital transformation and may even incorporate digital transformation into evaluation systems so as to promote its implementation.

For investors, efficient and convenient digital technologies can be used to compensate for disadvantages in information search and to obtain firms' disclosed information in a timely manner. At the same time, in addition to relying on traditional information channels such as financial reports and analysts' reports, investors should also use digital media technologies to supervise firms' accounting information in a timely manner and work together with firms and regulators to improve the operating efficiency of the capital market.

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