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Digital Finance and Accounting Information Comparability

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Abstract

Focusing on all A-share listed enterprises during the 2011–2023 timeframe, this study assesses the effect of digital finance on the comparability of corporate accounting data. The outcomes of the empirical tests indicate that digital finance notably boosts the degree of comparability of corporate accounting information. Mechanism tests reveal that digital transformation and intrinsic governance effectiveness serve as a mediator in the link from digital finance to accounting information comparability. Heterogeneity tests indicate that the impact of digital finance on accounting information comparability is more pronounced for enterprises in eastern and central China and those in non-high-tech industries.

Keywords

Digital Finance; Comparability of Accounting Information; Digital Transformation; Quality of Internal Controls.

1. Introduction and Literature Review

As an innovative financial service paradigm, digital finance enables conventional financial entities and internet-based enterprises to leverage digital technologies in providing a full spectrum of financial offerings, ranging from fund-raising and payment settlement to asset investment[1].Bears the mission of facilitating transformation, deepening services, and propelling the integrated development of the digital and real economies [2]. Existing literature extensively examines the economic impacts of digital finance.At the macroeconomic level, studies confirm that digital finance bridges gaps in conventional financial services in underdeveloped regions, help improve financing channels to promote coordinated urban-rural development, enhance the quality of economic growth[3], and also influence green economic efficiency[4], urban entrepreneurial vitality[5], and rural revitalisation[6]. At the micro-enterprise level, digital finance substantially addresses shortcomings in traditional finance by offering diversified financing instruments, thereby better meeting the financial resource needs of micro-enterprises[7]. As a major innovation in financial service models, it mitigates financing constraints and reduces information asymmetry, consequently enhancing enterprises' risk-bearing capacity [8], supporting technological innovation [9], and strengthening corporate value [10].

Accounting comparability refers to the degree of similarity in accounting information generated by different entities when processing identical or similar economic transactions[11], playing a crucial role in achieving financial reporting objectives and enhancing capital market efficiency[12]. Against the backdrop of burgeoning digital finance, the big data technologies inherently embedded within digital finance can bolster enterprises' financial information output capabilities[7], undoubtedly exerting significant influence on the quality of corporate accounting information. However, existing research has scarcely explored the relationship between digital finance and the comparability of corporate accounting information in depth. Drawing on the above, this research adopts empirical testing to explore the influence of digital finance on corporate accounting information comparability and its underling causal mechanisms.

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2. Research Hypothesis

2.1. Comparability of Digital Finance and Corporate Accounting Information

Digital finance not only enhances enterprises' financial information processing capabilities but also constrains management's self-serving behaviour. This compels companies to implement accounting standards and disclosure requirements with greater diligence and accuracy, thus enhancing the degree of comparability across corporate accounting information.

On the one hand, leveraging big data, AI, the internet, and blockchain, digital finance enables low-cost, low-risk processing of vast datasets[13].Through this standardised, structured approach to data processing, enterprises can more accurately identify and process their economic transactions, reducing subjectivity and deviations caused by human manipulation in financial information processing. This harmonises accounting information generation standards across enterprises and standardises disclosed financial information, hence elevating comparability in financial reporting. Conversely, by leveraging modern information technologies like big data to collect, organise, and analyse corporate data, digital finance enhances corporate transparency. This facilitates investors' comprehensive and accurate understanding of a company's operational capabilities and financial standing, dismantling information barriers between external investors and enterprises. Consequently, it enables more robust oversight of companies, facilitating the timely detection of moral hazard issues such as management's manipulation of accounting information or concealment of true financial circumstances. This creates effective constraints that curb management's opportunistic motives and self-serving behaviour, compelling enterprises to adhere more rigorously to accounting standards during information processing. Consequently, there is a marked improvement in the comparability of accounting data among enterprises of different types and scales. The foregoing discussion suggests Hypothesis 1: digital finance enhances the comparability of corporate accounting information.

2.2. The Mechanism of Digital Finance's Impact on the Comparability of Corporate Accounting Information

The deepening development of digital finance has spurred widespread adoption of mobile payment services such as Alipay and WeChat Pay. Numerous emerging business models have taken shape on digital payment platforms, enabling enterprises to pinpoint and capture market demands with precision, thereby creating fresh opportunities for their digital transformation [14]. Concurrently, digital finance leverages digital technologies to enhance the efficiency of credit resource allocation and elevate financial service standards. This reduces transaction costs and time expenditure for corporate financing, effectively enabling businesses to secure greater credit support[15]. Consequently, it alleviates funding pressures and advances the digital transformation of enterprises. As digital transformation progresses, enterprises can convert vast volumes of internal and external non-standardised, unstructured data into structured, standardised information [16]. This reduces human error in information processing, effectively safeguards the quality of information at the source, and enhances enterprises' capacity to process and analyse financial data. Consequently, it improves the comparability of accounting information across different enterprises. During digital transformation, enterprises utilise big data technologies to achieve visualised presentation of operational information across departments, establishing de facto real-time monitoring systems[17]. This significantly enhances transparency in financial information processing, compelling management to strictly adhere to accounting standards. Consequently, this reduces opportunistic accounting practices, enhancing the comparability of firms' financial information.Building upon the analysis presented above, this research puts forward Hypothesis 2: The digital transformation of firms

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exerts a mediating effect on the connection between digital finance and corporate accounting information comparability.

The advancement of digital finance has propelled the development of online digital platforms, providing robust support for enterprises to enhance the clarity of internal control processes and the efficiency of internal information transmission [18]. This, in turn, optimises the internal governance environment and drives an overall improvement in corporate internal control standards. Concurrently, digital finance, empowered by technologies such as digital technology, can efficiently consolidate diverse corporate information and conduct quantitative risk assessments. This establishes effective checks and balances mechanisms within enterprises [19], enabling clear delineation and real-time monitoring of critical nodes within internal control processes. It facilitates coordinated operations across departments based on clearly defined responsibilities, thereby comprehensively enhancing corporate internal control standards. As a vital internal oversight mechanism, internal control aims to ensure the accuracy of financial reporting. Its efficient operation provides robust internal assurance for improving accounting comparability [20]. High-quality internal control exerts effective constraints and supervision on management, compelling them to adhere to industry standards and provide accounting information of value to investors. This, to a certain extent, curbs opportunistic behaviour by management who might otherwise violate industry conventions or relevant regulations in pursuit of personal gain [21]. Consequently, enterprises tend to adopt uniform accounting standards, strictly adhere to accounting principles and relevant laws and regulations in their accounting practices, and disclose financial information that is more standardised, complete, and accurate. This translates into greater comparability in corporate financial reporting. The analysis thus suggests Hypothesis 3, identifying internal control quality as a mediating pathway between digital finance and accounting comparability.

3. Research Design

3.1. Data Sources

Drawing on data from all A-share listed firms between 2011 and 2023, this paper provides an empirical analysis of digital finance's impact on accounting comparability. Digital finance data is sourced from Peking University's Digital Finance Research Centre, while additional financial metrics of enterprises are mainly retrieved from the CSMAR database. The data underwent the following processing: Excluding the financial industry, ST, *ST, PT and samples with missing or abnormal data, the upper and lower 1% of continuous variables are trimmed.

3.2. Variable Settings

In this study, the explanatory variable is the development level of digital finance (Dif), which is measured by the logarithmic value of the Digital Financial Inclusion Index of each city. The data is derived from the Digital Financial Inclusion Index co-compiled by the Institute of Digital Finance of Peking University and Ant Group [22], and the calculation method refers to the research of Fu Shun et al. [23]. The explained variable is corporate accounting information comparability (Comp), which is calculated by adopting the method proposed by De Franco et al. [24]. In terms of control variables, with reference to the research of Zhou Donghua and Yang Xiaokang [25] and Liao Yigang et al. [26], the following variables are selected: firm size, firm age, asset-liability ratio, board size, return on total assets, proportion of independent directors, cash flow, ownership concentration, and operating income growth rate.

3.3. Model Construction

To examine the impact of digital finance on the comparability of corporate accounting information, this paper constructs Model (1):

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$$Comp_{it} = \alpha_0 + \alpha_1 Dif_{i,t} + \alpha_i Controls_{i,t} + \sum Industry + \sum Year + \varepsilon_{i,t} \quad (1)$$

4. Empirical Results Analysis

4.1. Descriptive Statistics

Descriptive statistics corresponding to the core variables are summarized in Table 1.Regarding digital finance, the average score reached 5.490, while the corresponding minimum and maximum values stood at 4.080 and 5.895 respectively, with a standard deviation of 0.416.This indicates varying levels of digital finance development across different regions. Regarding accounting information comparability, the mean for corporate accounting comparability was -0.015, the range spanned from -0.058 to -0.005. Such data indicates that there is scope for improvement in the accounting information comparability of sample enterprises.

Table 1. Descriptive statistics for key variables

Variable	Observed values	Mean	Median	Standard deviation	Minimum value	Maximum value
Comp	20211	-0.015	-0.012	0.009	-0.058	-0.005
Dif	20211	5.490	5.654	0.416	4.080	5.895
Size	20211	22.582	22.390	1.341	20.020	26.650
Fage	20211	3.026	3.045	0.284	2.197	3.583
Lev	20211	0.455	0.452	0.201	0.070	0.905
Board	20211	2.132	2.197	0.202	1.609	2.708
Roa	20211	0.031	0.031	0.061	-0.219	0.195
Indep	20211	0.377	0.364	0.055	0.333	0.571
Caf	20211	0.055	0.052	0.074	-0.159	0.281
Top	20211	0.334	0.311	0.149	0.078	0.729
Growth	20211	0.109	0.074	0.308	-0.542	1.629

4.2. Basic Regression Analysis

As shown in Table 2, the baseline regression reveals a significantly positive coefficient for digital finance (Dif) at the 1% level, confirming its beneficial effect on firms' accounting comparability. Hypothesis 1 is thus validated.

Table 2. Basic regression analysis results

	(1)	(2)
	Comp	Comp
Dif	0.0066***	0.0048***
	(5.7997)	(4.9300)
Control variables	No	Yes
Industry fixed effect	Yes	Yes
Year fixed effect	Yes	Yes
N	20211	20211
Adj.R^2	0.3175	0.4207

4.3. Endogeneity Test

4.3.1. Instrumental Variables Method

To mitigate endogeneity issues arising from circular causality and omitted variables, this study adopts provincial internet penetration rate (IV) as an instrumental variable, following the methodology of Xie Xuanli et al. [27]. From a correlation perspective, internet penetration rate, as a crucial infrastructure for digital finance, is closely associated with the development and evolution of digital finance [27]. Regarding exogeneity, internet penetration is unlikely to directly influence comparability in corporate reporting. Hence, this study employs the aforementioned instrumental variable and tests it using two-stage least squares (2SLS). As

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shown in columns (1) and (2) of Table 3, the digital finance coefficient is significantly positive at the 5% level, verifying the stability of baseline regression outcomes.

4.3.2. Preference Score Matching

This paper further employs propensity score matching (PSM) to mitigate potential self-selection issues within the model. Specifically, the digital financial development levels within the sample are divided into an experimental group and a control group based on the industry's annual average. The covariates remain identical to the control variables discussed earlier. A 1:1 nearest neighbour matching with a caliper of 0.05 is applied, and the matched samples are selected for regression analysis. Column (3) of Table 3 reports the regression results after PSM matching. The digital finance coefficient remains significantly positive at the 1% level, supporting the robustness of the baseline finding.

Table 3. Endogeneity test results

	(1)	(2)	(3)
Variable	Instrumental Variables First-Stage Regression	Instrumental Variables Second-Stage Regression	Preference score matching
	Dif	Comp	Comp
Dif		0.0146**	0.0051***
		(2.3173)	(4.5325)
IV	0.0692***		
	(10.1248)		
Kleibergen-Paap rk LM	92.89 ***		
Kleibergen-Paap Wald rk F	102.51***		
N	20,211	20,211	10735
Adj.R^2		0.1427	0.4159

4.4. Robustness Test

4.4.1. One-period Lag Treatment of Explanatory Variables

Given that the impact of digital finance on the comparability of corporate accounting information may exhibit a certain degree of lag, this study selected digital finance from the previous period (L1.Dif) as the explanatory variable and conducted a new regression test. As shown in Column (1) of Table 4, the effect of digital finance from the previous period on accounting comparability remained significantly positive, corroborating robust consistency in study outcomes.

4.4.2. Replace Explanatory Variables

Replace the digital finance indices of the cities where each enterprise is located with those of their respective provinces. The test results after substituting the digital finance development level indicators are shown in column (2) of Table 4. The regression coefficient for Dif_S is significantly positive at the 1% level, indicating that the primary research conclusions remain unchanged after altering the measurement method for the digital finance indicators.

4.4.3. Replace the Explained Variable

Drawing upon the research of De Franco et al. [24], we replaced the conventional measure of accounting comparability with two alternative approaches: first, by ranking firms in descending order based on their annual accounting comparability scores relative to peers within the same industry; second, by calculating the mean of the top ten firms' scores (denoted as Comp_M). The results, presented in column (3) of Table 4, indicate that the coefficient for digital finance remains statistically significant at the 1% level, thereby confirming the robustness of our conclusions.

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Table 4. Robustness test results

	(1)	(2)	(3)
	Explanatory variable One period lagged	Replace explanatory variables	Replace the explained variable
	Comp	Comp	Comp_M
L1. Dif	0.0041***		
	(3.9107)		
Dif_S		0.0025***	
		(4.1567)	
Dif			0.0022***
			(3.4747)
N	16169	20211	20211
Adj.R^2	0.4420	0.4195	0.3000

5. Further Research

5.1. Mechanism Verification

To investigate the causal pathways by which digital financial exert an effect on enterprise accounting comparability levels, this paper draws upon the research of Wen Zhonglin et al. [28] to construct the following mediation effect model based on Model (1):

$$M_{it} = \beta_0 + \beta_1 Dif_{i,t} + \beta_i Controls_{i,t} + \sum Industry + \sum Year + \varepsilon_{i,t} \quad (2)$$

$$Comp_{it} = \gamma_0 + \gamma_1 Dif_{i,t} + \gamma_2 M_{it} + \gamma_i Controls_{i,t} + \sum Industry + \sum Year + \varepsilon_{i,t} \quad (3)$$

5.1.1. Digital Transformation

Based on the preceding theoretical analysis, digital finance influences corporate accounting comparability through the mediating role of digital transformation. Following the methodology of Zhen Hongxian et al. [29], this study employs the corporate digital transformation index from the CSMAR database's research repository on digital transformation among Chinese listed companies to measure firms' digital transformation levels. The regression coefficient for digital finance is significantly positive at the 1% level, while the coefficient for the mediating variable-digital transformation-is significantly positive at the 5% level. These findings indicate that digital finance enhances the comparability of corporate accounting information by elevating firms' digital transformation levels, thereby validating Hypothesis 2.

5.1.2. Internal Control Quality

Table 5. Mechanism verification results

	(1)	(2)	(3)	(4)
	Dat	Comp	Db	Comp
Dif	0.3198***	0.0046***	0.7276***	0.0043***
	(8.3042)	(4.7322)	(6.3340)	(4.4348)
Dat		0.0008**		
		(2.0096)		
Db				0.0008***
				(8.9980)
N	20211	20211	20211	20211
Adj.R^2	0.4199	0.4210	0.1886	0.4292

Based on the preceding theoretical analysis, internal control quality mediates the influence of digital finance over accounting comparability. Following the methodology of Nie Xingkai et al. [20], this study employs the internal control index for listed companies from the Dibo database,

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divided by 100, as a measure. A higher value indicates superior internal control quality. The regression results in Column (3) of Table 5 demonstrate that digital finance significantly enhances a firm's internal control quality. In Column (4) of Table 5, the significantly positive coefficients for both digital finance and internal control at the 1% level suggest that the former enhances accounting comparability via strengthening the latter, thereby validating Hypothesis 3.

5.2. Heterogeneity Analysis

5.2.1. Regional Heterogeneity

To assess the impact of regional disparities, the sample was stratified into an eastern/central cohort and a western cohort based on corporate locations. Regression analyses were then conducted to evaluate their differing effects. As shown in Table 6, columns (1) and (2), for enterprises in the western region, accounting comparability is not significantly influenced by digital finance. Conversely, a positive and significant effect of digital finance is observed on the comparability of accounting information for companies in the eastern and central regions.

5.2.2. Industry Heterogeneity

The CSRC's 2012 industry classification, in conjunction with the National Key Supported High-Tech Fields, was employed to divide the sample into high-tech and other industries, in line with Shi Qi et al. [30].This approach aims to analyse the impact of industry differences on digital finance and corporate accounting comparability. As shown in columns (3) and (4) of Table 6, the regression coefficient for digital finance is significantly positive in the non-high-tech industry sample but not significant in the high-tech industry sample. This indicates that digital finance exerts a stronger enhancing effect on the comparability of accounting information for non-high-tech industry enterprises.

Table 6. Results of the heterogeneity analysis

	(1)	(2)	(3)	(4)
	Eastern and Central Regions	Western Regions	High-tech industry	Non-high-tech industries
Dif	0.0052***	0.0042	0.0014	0.0052***
	(4.4841)	(1.5468)	(1.1521)	(3.8316)
N	17310	2901	8389	11822
Adj.R^2	0.4265	0.4023	0.3374	0.4558

6. Research Findings

Utilizing data from all A-share listed companies between 2011 and 2023, this paper assesses the effect of digital finance on the comparability of corporate accounting information. The findings reveal that digital finance significantly enhances the comparability of corporate accounting information, with this conclusion remaining robust after conducting a series of endogeneity tests and robustness checks. Mechanism analysis indicates that digital transformation and internal control quality serve as mediating mechanisms through which digital finance influences accounting comparability. Heterogeneity tests further show that the positive effect of digital finance on accounting comparability is more pronounced in eastern and central regions and among non-high-tech industries.

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