

THE ROLE OF DIGITAL TRANSFORMATION IN IMPROVING THE EFFICIENCY OF CORPORATE FINANCIAL MANAGEMENT

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ABSTRACT

In the context of the Fourth Industrial Revolution and the rapid advancement of digital technologies, digital transformation has emerged as an inevitable trajectory for firms seeking to enhance their competitive capabilities and managerial efficiency. Among various functional domains, corporate financial management is particularly susceptible to profound changes driven by the adoption of digital technologies. This study aims to examine the role of digital transformation in improving the effectiveness of corporate financial management within the contemporary business environment. The research employs a qualitative approach, drawing upon a comprehensive literature review and a critical synthesis of prior studies related to digital transformation, financial management, and technological applications in business organizations. The findings indicate that the integration of technologies such as enterprise resource planning systems, artificial intelligence (AI), big data analytics, and blockchain can significantly enhance financial transparency, optimize cash flow management, support financial decision-making processes, and reduce administrative costs. Nevertheless, the implementation of digital transformation in financial management is not without challenges, including substantial technological investment costs, constraints in human resource capabilities, and data security risks. Based on these insights, the study proposes several managerial implications to assist firms in effectively executing digital transformation initiatives within their financial management practices.

Keywords: Digital transformation, corporate financial management, artificial intelligence, firm value.

1. INTRODUCTION

We are entering the era of the Fourth Industrial Revolution, in which the digital economy is reshaping the global competitive landscape [1]. The rapid advancement of core technologies such as big data, artificial intelligence (AI), cloud computing, and blockchain has profoundly transformed customer expectations and organizational operating models [2], [3], [4]. In this context, digital transformation (DT) is no longer merely a supportive tool but has evolved into a survival-oriented strategy that enables firms to sustain competitiveness, resist market displacement, and redefine value creation mechanisms [1].

The primary objective of corporate financial management is to maximize firm value through effective investment decisions, financing strategies, and dividend policies [5]. However, achieving this objective requires managers to continuously address challenges related to cost optimization, cash flow management, asset turnover acceleration, and risk control. In practice,

many firms encounter inefficiencies due to cumbersome organizational structures and the existence of “information silos,” which disrupt data flows, increase internal transaction and administrative costs, and ultimately diminish overall financial performance [6].

Digital transformation mitigates the adverse impact of diversification on total factor productivity (TFP). While heightened economic policy uncertainty tends to constrain diversification, digital transformation can offset this effect [7]. A growing body of literature suggests that digital transformation enhances operational efficiency, improves decision-making quality, and strengthens managerial flexibility [4]. In an increasingly competitive environment, the effective implementation of digital transformation is widely regarded as a critical determinant of sustained competitive advantage and long-term development.

From a financial management perspective, digital transformation offers breakthrough solutions. Operationally, digital technologies dismantle information barriers and enable process automation across production and business activities, thereby significantly reducing transaction and administrative costs while alleviating information asymmetry [3], [6]. In terms of asset utilization efficiency, technologies such as the Internet of Things (IoT) and integrated management platforms allow firms to monitor assets in real time, reduce inventory levels, enhance total asset turnover, accelerate the capital cycle, and directly increase free cash flow [1]. Beyond improving core profitability indicators—including return on assets (ROA), return on equity (ROE), and earnings per share (EPS)—digital transformation also enhances financial transparency and strengthens market recognition, thereby enabling firms to access external financing more easily and at lower costs [8].

One of the functional areas most profoundly affected by digital transformation is corporate financial management. Financial management plays a central role in ensuring organizational stability and operational efficiency through the mobilization, allocation, and control of financial resources. In the contemporary business environment, financial decisions have become increasingly complex and require timely and accurate information. However, many firms continue to rely on traditional financial management practices, in which data processing remains largely manual, fragmented, and lacking real-time integration. These limitations can undermine managerial effectiveness and elevate financial risks.

Although digital transformation offers substantial potential benefits for corporate financial management, its implementation also presents significant challenges. First, investments in advanced technological systems often involve substantial costs, particularly for small and medium-sized enterprises. Moreover, many organizations face difficulties in transforming managerial mindsets and developing a workforce capable of operating and leveraging new technologies. In addition, concerns related to data security and technological risks have become increasingly prominent during the digital transformation process [1], [2], [9].

In recent years, a growing body of research has examined digital transformation and the impact of technology on firm performance. However, most studies primarily focus on the general effects of technology on business performance, while relatively limited attention has been paid to the specific role of digital transformation in corporate financial management. Therefore, investigating this relationship from a qualitative perspective can provide deeper insights into the mechanisms through which digital technologies influence financial activities within firms. By synthesizing and analyzing prior studies, a qualitative approach can clarify how digital technologies enhance financial management efficiency, while also identifying the opportunities and challenges associated with digital transformation.

Motivated by the aforementioned issues, this study aims to analyze the role of digital transformation in improving the effectiveness of corporate financial management within the rapidly evolving digital economy. Specifically, the research seeks to elucidate the relationship between digital transformation and firms' financial management capabilities by examining the

application of digital technologies in financial activities. At the same time, it discusses the challenges firms may encounter during the implementation process and proposes several managerial implications to help organizations effectively leverage the benefits of digital technologies.

By offering a comprehensive perspective on the role of digital transformation in corporate financial management, this study is expected to contribute to the expansion of the theoretical foundation of digital transformation within the field of corporate governance. Furthermore, the findings provide strategic implications for managers seeking to maximize firm value in the digital era, in alignment with the evolving economic landscape.

2. THEORETICAL BACKGROUND

2.1. Digital transformation in enterprises

In recent years, digital transformation (DT) has emerged as a widely discussed topic in the fields of business administration and economics. The rapid advancement of digital technologies—such as artificial intelligence, big data analytics, cloud computing, and the Internet of Things—has fundamentally reshaped how firms are organized and operated within the modern economy. DT in enterprises extends beyond the mere adoption of new technologies or incremental adjustments to existing processes; rather, it entails a profound reconfiguration of business logic and organizational operating models [1].

This concept is broadly defined as the comprehensive integration of advanced digital capabilities across all domains of an organization, including strategy, governance, organizational culture, human resources, processes, products, services, and ecosystem engagement [2]. The core objective of digital transformation is to fundamentally alter how firms leverage digital technologies to develop new business models, thereby enabling the creation and capture of greater value [4].

In the context of rising labor costs and increasingly fragmented market demand, digital transformation has evolved from a supplementary operational tool into a central driver of competitive capability and a critical survival strategy for firms [2].

According to Verhoef et al. [4], digital transformation is conceptualized as the process of leveraging digital technologies to induce fundamental changes in business operations, enabling firms to create new value for customers while enhancing overall organizational performance. Similarly, Vial [10] defines digital transformation as the process through which organizations utilize digital technologies to improve operational efficiency, innovate business models, and strengthen competitiveness in an increasingly dynamic and uncertain business environment.

2.1.1. Structural foundations of digital transformation

From a structural perspective, DT within enterprises is typically conceptualized as a two-layer framework:

Core Digital Technologies (CORETECH): This layer comprises general-purpose technological infrastructures that function as foundational enablers or catalysts. It includes cloud computing, artificial intelligence (AI), big data analytics, blockchain, and the Internet of Things (IoT) [2], [8].

Digital Technology Applications (TECHAPP): The second layer leverages the capabilities of core technologies to develop specific solutions tailored to particular processes or industries (e.g., healthcare technologies, autonomous systems, and digital commerce). The effective integration of these two layers enables firms to continuously strengthen their core capabilities while simultaneously experimenting with innovation at the application level [2].

2.1.2. Stages of the digital transformation process

The process of digital transformation within enterprises represents an evolutionary trajectory, progressing from incremental changes to comprehensive, organization-wide transformation. This process is commonly categorized into three distinct stages, as illustrated in Figure 1 [4].

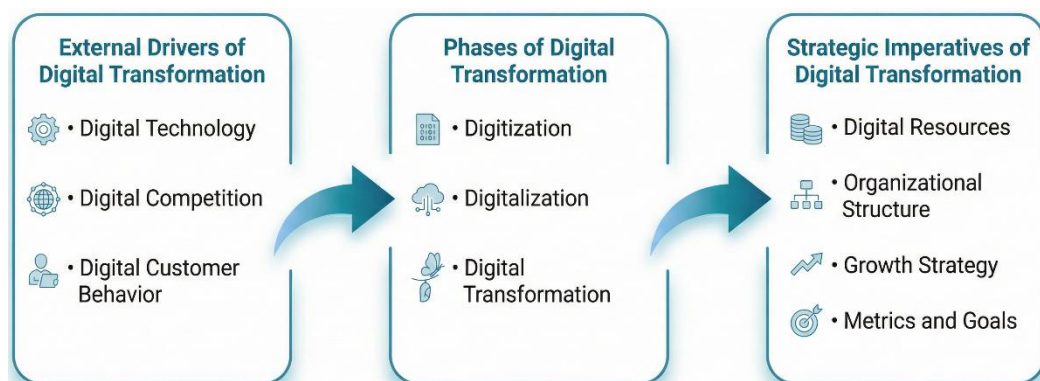


Figure 1. Discussion flow model of digital transformation. Source: [4]

The first stage is digitization, which refers to the conversion of information from physical formats into digital data, thereby facilitating more efficient storage, retrieval, and processing of information. The second stage is digitalization, involving the use of information technology or digital technologies to modify and optimize existing business processes (e.g., the adoption of online communication channels or mobile platforms to enhance customer interaction). The final stage is digital transformation, representing the most extensive and pervasive level of change. At this stage, digital technologies fundamentally reshape the entire organization, leading to a reconfiguration of business logic and a comprehensive restructuring of operating models, strategies, and value creation mechanisms based on digital foundations.

From an execution-oriented management perspective, a comprehensive digital transformation roadmap can be conceptualized as a cyclical process consisting of nine iterative stages, include (1) digital awareness, (2) strategic alignment, (3) capability development, (4) pilot experimentation, (5) process redesign, (6) digital technology integration, (7) digital governance, (8) ecosystem collaboration, and (9) continuous innovation [2].

2.1.3. Resource requirements and organizational restructuring

DT requires firms to be conceptualized as possessing a higher-order dynamic capability, rather than merely a static repository of technological assets [1]. To successfully implement DT, organizations must undertake substantial investments in core digital assets while simultaneously developing three distinctive digital capabilities [4]:

Digital agility: The ability to rapidly sense and seize market opportunities, while continuously reconfiguring and redeploying existing resources to adapt to environmental changes.

Digital networking capability: The capacity to attract, connect, and co-create value with a diverse set of stakeholders within the digital ecosystem, including customers, suppliers, and third-party partners.

Big data analytics capability: The ability to collect, manage, and analyze vast volumes of data to support personalized business decision-making and revenue optimization.

Beyond technological adoption, digital transformation necessitates the dismantling of traditional, rigid organizational structures. Rather than relying on hierarchical, top-down

configurations with multiple managerial layers, digitally oriented firms require more agile organizational forms, the establishment of autonomous business units dedicated to innovation, and a fundamental redefinition of the role of the information technology (IT) function in conjunction with data analytics [4].

2.1.4. Digital transformation models in practice

This transformation is particularly evident in manufacturing firms, where it is commonly categorized into three distinct models [8]: (1) Digital value-added service transformation: This model focuses on developing new services or products enabled by digital technologies to enhance customer experience and expand market share; (2) Digitally integrated manufacturing transformation: This approach aims to achieve smart manufacturing through the integration of cyber-physical systems, thereby improving production efficiency and reducing operational costs; (3) Dual-value digital transformation: This model leverages internet-based platforms to connect customer data, optimize supply chains, and enhance firms' responsiveness to dynamic market conditions.

2.2. Corporate financial management

Corporate financial management is one of the core functions within organizational management. According to Damodaran [5], corporate financial management encompasses activities related to the mobilization, allocation, and management of financial resources with the objective of maximizing firm value. In other words, financial management plays a critical role in ensuring the efficient use of capital and maintaining financial stability throughout the firm's operations [5].

Any decision made within a firm that involves the use of money carries financial implications and is therefore considered a financial management decision. Regardless of whether the entity is a large publicly listed corporation or a small privately owned business, corporate financial management is governed by a set of common fundamental principles:

2.2.1. Firm value maximization

Financial management cannot be coherently developed without a unified objective. The fundamental goal of traditional corporate finance theory is the maximization of firm value.

In certain contexts, this objective is narrowed to the maximization of stock price for publicly listed companies, as share price provides a clear and observable indicator of the success or failure of managerial decisions. However, for stock prices to accurately reflect the long-term value of a firm, financial markets must operate efficiently, managers must disclose information in a truthful and timely manner, and they must act in the best interests of shareholders.

2.2.2. Three fundamental principles of corporate financial management

All corporate financial management activities are grounded in three core principles: the investment principle, the financing principle, and the dividend principle [5].

The Investment Principle: Firms should invest only in assets and projects that generate returns exceeding a minimum required rate of return (hurdle rate). This hurdle rate must accurately reflect the risk profile of the project and the nature of the financing used (debt or equity). Investment decisions should not be evaluated solely based on accounting profits but rather on actual cash flows and their timing. The concept of "investment" is broad, encompassing both strategic decisions—such as market expansion and mergers and acquisitions (M&A)—and routine working capital management decisions, including inventory levels and customer credit policies.

The Financing Principle: Firms should select an optimal mix of financing (between debt and equity) that maximizes the value of their investments. (1) The use of debt provides tax advantages, as interest expenses are tax-deductible, and imposes financial discipline on management. However, excessive reliance on debt increases financial risk, expected bankruptcy costs, and agency costs arising from conflicts of interest between shareholders and creditors. (2) Effective financing management requires aligning the maturity structure and cash flow characteristics of liabilities with those of the financed assets (e.g., using long-term debt to finance long-term assets) to minimize default risk.

The Dividend Principle: If a firm lacks sufficient investment opportunities that yield returns above the required hurdle rate, excess cash flows should be returned to shareholders. This can be achieved through dividend payments or share repurchases. The decision depends on the level of free cash flow to equity—that is, the residual cash flow after accounting for reinvestment needs and debt obligations. Firms with a strong track record of value-generating investments are typically trusted by shareholders to retain earnings, whereas underperforming firms face greater pressure to distribute cash to prevent inefficient use of resources.

2.2.3. Agency costs and corporate governance

A critical aspect of corporate financial management involves addressing issues arising from the separation of ownership (shareholders) and control (managers). Managers do not always act to maximize firm value; instead, they may pursue personal benefits, such as non-financial perks or “empire-building” objectives that expand firm size beyond its optimal level. This divergence of interests gives rise to agency costs, requiring shareholders and creditors to incur monitoring and bonding costs to constrain managerial behavior. The use of debt can impose disciplinary effects, as the obligation to meet interest and principal payments compels managers to operate efficiently in order to avoid the risk of default, in contrast to equity financing [5].

In an increasingly complex and volatile business environment, the role of financial management has become even more critical. Managers are required to make timely and accurate financial decisions based on comprehensive and up-to-date information. However, traditional financial management practices often face significant limitations, including reliance on manual processes, lack of transparency, and difficulties in updating data in real time. These constraints can reduce decision-making effectiveness and increase financial risk for firms.

Consequently, the adoption of digital technologies in financial management has become an inevitable trend aimed at improving the quality of financial information and enhancing managerial effectiveness. Modern technological systems enable firms to automate a wide range of financial processes, thereby minimizing errors, reducing costs, and strengthening financial control capabilities.

2.3. The role of digital technologies in corporate financial management

Emerging technologies not only enable the automation of accounting and financial processes but also enhance data analytics and financial forecasting capabilities.

In the context of the modern economy, the advancement of digital technologies has brought about significant transformations in the way corporate financial management is conducted. Moving beyond their traditional role as mere operational support tools, digital technologies have become core strategic drivers, exerting profound influence across all dimensions of financial management. Their role is reflected in the following key aspects:

Enhancing operational efficiency and cash flow generation: Digital technologies enable firms to redesign business processes and eliminate information silos, thereby ensuring seamless data integration across the entire system [3]. The implementation of technologies such as the Industrial Internet of Things (IIoT) and Manufacturing Execution Systems (MES)

allows firms to monitor physical assets in real time, accurately forecast demand, reduce inventory levels, and minimize equipment downtime. These improvements accelerate capital turnover, directly increase total asset turnover, and enhance free cash flow generation [1]. In addition, automation replaces repetitive tasks, significantly improving labor productivity and enabling higher output at optimized costs [8].

Direct improvement of financial performance indicators: Digital technologies exert a direct positive impact on key profitability metrics that are central to financial management, including return on assets (ROA), return on equity (ROE), and earnings per share (EPS). Digital transformation not only reduces costs but also creates new value-generating pathways (such as digital value-added services), thereby driving revenue growth. This improvement in financial performance serves as the most critical transmission mechanism through which the benefits of digital transformation are translated into shareholder value [2].

Enhancing internal governance efficiency and equitable income distribution: From a structural governance perspective, digital transformation promotes flatter organizational models, accelerating information flows and simplifying departmental structures [8]. The adoption of digital technologies enables greater decentralization, reduces excessive concentration of authority within top management, and lowers information-related costs. Notably, digital technologies also contribute to narrowing internal income disparities, fostering more inclusive organizational prosperity. This is achieved through a dual mechanism: increasing employee compensation—particularly for highly skilled labor—while simultaneously curbing excessive executive remuneration through more transparent monitoring and performance evaluation [3].

Reducing information asymmetry and attracting external capital: The cost of capital is highly dependent on the level of corporate transparency. Digital transformation enhances operational transparency and information quality, thereby reducing information asymmetry between firms and external investors. Positive signals from digital investments attract attention from analysts and media, increasing recognition in capital markets. This recognition facilitates credit assessment by financial institutions, enabling firms to access external financing more easily and at lower costs. From the perspective of Transaction Cost Theory, information technology significantly reduces coordination and communication costs both internally and with external stakeholders [8].

Maximizing firm market value: The ultimate objective of financial management is to maximize firm value. Capital markets tend to assign higher valuations to firms possessing strong “digital DNA,” reflecting expectations of enhanced profitability and future growth potential [1], [2]. Empirical studies indicate that digital technologies directly increase market value relative to asset replacement cost through three key mechanisms: upgrading human capital, increasing technological innovation output (e.g., patents), and improving operational efficiency [1].

However, to ensure the sustainability of these financial benefits, financial managers must also address emerging risk management challenges. Environmental risks—such as climate change and air pollution—can damage fixed assets, increase operating costs, and significantly undermine the value chains enabled by digital technologies, thereby negatively affecting both financial performance and firm valuation [2].

Moreover, excessive investment in digital technologies without an appropriate strategic orientation may lead to the “productivity paradox,” whereby firms incur substantial investment costs without achieving commensurate returns. Therefore, the role of digital technologies can only be fully realized when aligned with a sound financial strategy and strong organizational adaptability [1].

Overall, digital technologies create new opportunities for firms to enhance the effectiveness of corporate financial management. Nevertheless, their successful implementation requires substantial resource investment and the adoption of a well-defined and coherent digital transformation strategy. Table 1 is summary table of key studies on digital transformation in financial management.

Table 1. Key studies on digital transformation in financial management

Author(s) (Year)	Research Subject	Main Objective	Key Findings	Research Approach	Notes (Inferred)
Aswath Damodaran (2014) [5]	Diverse firms (Disney, Vale, Tata Motors, Baidu, Deutsche Bank, Bookscape)	Examining the application of corporate finance principles to investment, financing, and dividend decisions in practical contexts.	Digital technologies and data improve risk analysis through simulations and real-time updates; investment, financing, and dividend decisions are closely interconnected and directly affect firm value.	Case studies, financial modeling, statistical regression, Monte Carlo simulation, and real options analysis.	Emphasizes the use of digital tools (spreadsheets, online databases) in implementing financial theories.
Mongkhol Moolkham (2025) [2]	Non-financial firms listed on the Stock Exchange of Thailand (SET)	Investigating the impact of digital transformation on firm valuation through financial performance, with environmental risk as a moderating factor.	Core digital technologies and digital applications positively affect financial performance and firm value. Financial performance acts as the main mediating mechanism, while environmental risks weaken value creation efficiency.	Partial Least Squares Structural Equation Modeling (PLS-SEM) using panel data from 2022–2024.	Highlights that technology alone is insufficient under high environmental risk conditions; firms must integrate environmental resilience to sustain long-term value.
Wang & Xia (2024) [2]	Utilities sector	Examining the impact of digital transformation on operational efficiency.	Digital transformation may negatively affect short-term performance due to large upfront investments and workflow disruptions.	Not explicitly stated in the excerpt, but market valuation indicators such as Tobin's Q were employed.	Warns about the risk of inefficient investments if digital transformation fails to generate actual profitability.
Jiang et al. (2025) [2]	Firms (specific sector not clearly stated)	Exploring the relationship between digital transformation initiatives and financial performance.	Digital transformation enhances resource allocation efficiency through technological innovation, process optimization, and stronger internal controls.	Quantitative research approach.	Focuses on internal organizational mechanisms that improve financial efficiency through digitalization.
Chao et al. (2024) [2]	Rural commercial banks	Investigating the impact of digital transformation on bank profitability.	Digital transformation improves asset quality and risk management, thereby increasing profitability.	Quantitative research approach.	Demonstrates the benefits of digitalization in reducing financial risks and optimizing operational costs.
Li et al. (2017) [10]	SMEs – Alibaba case	Examining SME digital transformation	Cross-border e-commerce capabilities are developed through mentoring, facilitation, and rule-	Case study.	Highlights the role of digital platforms in helping SMEs

Author(s) (Year)	Research Subject	Main Objective	Key Findings	Research Approach	Notes (Inferred)
		from a capability perspective.	setting mechanisms on digital platforms.		mobilize financing resources and access markets.
Karimi & Walter (2015) [10]	Newspaper industry	Investigating the role of dynamic capabilities in responding to digital disruption.	The ability to develop digital platforms depends on innovative organizational culture and multimedia thinking, directly influencing financial outcomes.	Factor-based study.	Digital transformation in financial management is associated with business model innovation to sustain revenues.
Verhoef et al. (2021) [4]	Multi-industry firms (traditional and digital firms)	Providing a multidisciplinary reflection on digital transformation and proposing future research agendas.	Digital transformation shifts traditional performance metrics (e.g., ROI, profitability) toward digital process metrics (e.g., online sentiment, platform engagement). It also requires agile organizational structures and influences resource allocation through digital platforms.	Scoping review and multidisciplinary discussion.	Focuses on strategic changes and stages of digitalization affecting overall firm performance management.
Ziyu Jiang, Ling Li, Chao Zhou (2026) [1]	Chinese listed manufacturing firms	Exploring the impact of digital transformation on market value and the mechanisms driving performance improvement.	Digital transformation positively affects market value (Tobin's Q). Human capital upgrading, technological innovation, and operational efficiency serve as mediating factors. Operational efficiency (asset turnover) is the practical pathway to value realization.	Longitudinal panel data analysis (2012–2024) using Dynamic Capabilities Theory (DCT).	Digital transformation improves financial management efficiency through asset structure and cash flow optimization.
Xianli Kong et al. (2025) [8]	2,346 listed manufacturing firms in China	Investigating how digital transformation shapes operational performance through a technology–organization–external network framework.	Digital transformation improves performance through enhanced innovation efficiency, labor productivity, and capital market recognition. The impact evolves from negative to positive over time, requiring sustainable financial investment.	Instrumental Variable (IV) and Two-Stage Least Squares (2SLS) regression using panel data (2011–2021).	Emphasizes the role of digital finance and infrastructure in supporting long-term investment decisions.
Xue Lei et al. (2026) [9]	Chinese A-share listed firms	Investigating the impact of AI adoption on innovation behavior and resource allocation.	AI adoption generates a “crowding-out” effect on innovation due to high cost pressures, reducing investment intensity in innovative talent and specialized technical equipment.	Text analysis for AI index construction and Poisson regression using 2013–2023 data.	Warns against misallocation of financial resources when firms rely excessively on AI while neglecting traditional innovation factors.

Author(s) (Year)	Research Subject	Main Objective	Key Findings	Research Approach	Notes (Inferred)
María M. Feliciano-Cestero et al. (2023) [6]	Multinational enterprises (MNEs) and SMEs	Evaluating factors influencing digital transformation and firm internationalization	Digital transformation has dual effects: positive effects (reduced operating costs and enhanced connectivity) and negative effects (cybersecurity and multinational management risks). Leadership and digital servitization are key determinants.	Systematic Literature Review and bibliometric analysis over 20 years.	Examines the influence of digital technologies on international financing decisions and cross-border risk management.
ChengZhi Qiao & Shan Chen (2025) [3]	Chinese A-share listed firms (2013–2022)	Examining the causal relationship between digital transformation and income distribution within firms, focusing on wage gaps and managerial efficiency.	Digital transformation narrows internal income inequality (approximately 6.8%) by increasing employee wages and reducing excessive executive compensation. The effect is stronger in private firms and manufacturing industries.	Two-way fixed effects model with 29,300 observations and instrumental variable analysis for robustness checks.	Digital technologies (Big Data, AI, Blockchain) improve compensation transparency and governance structures, indirectly promoting fairness in profit and income distribution.

Source: Author's compilation.

3. METHODOLOGY

From a qualitative research perspective, the model extends beyond measurable variables to focus on explaining the processes, mechanisms, and contextual factors through which DT restructures corporate financial management systems to generate firm value. Figure 2 illustrates the proposed qualitative research model, synthesized from Dynamic Capabilities Theory, Transaction Cost Theory, and the “Technology–Organization–Network” analytical framework, and structured into four main components:

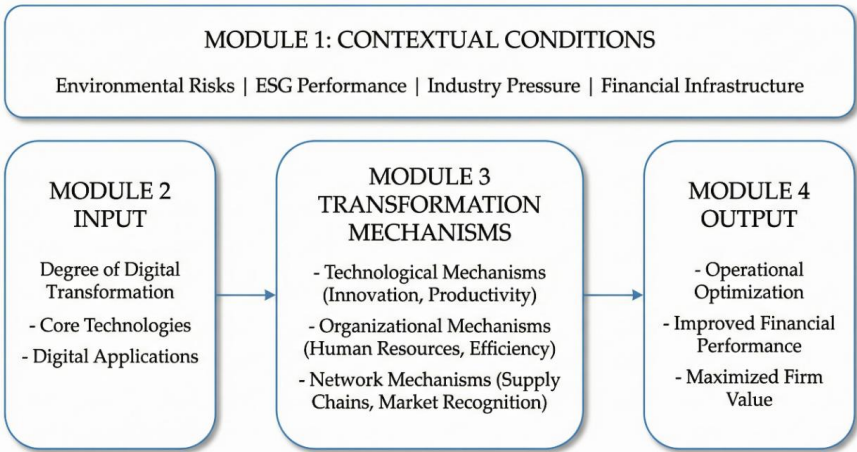


Figure 2. Research model. Source: own research

Module 1: Contextual and moderating factors

The effectiveness of digital transformation is strongly moderated by both objective and subjective contextual factors. From a risk perspective, environmental uncertainties—such as climate change and extreme weather events—can damage physical assets, disrupt supply chains, and increase maintenance costs. These risks may erode financial resources and significantly weaken or even hinder the positive impact of digital transformation on firm value [2].

Conversely, strong ESG (Environmental, Social, and Governance) performance serves as both a resource buffer and a credibility signal, enabling firms to attract patient, long-term capital, thereby amplifying the benefits of digital transformation [1].

In addition, a firm's strategic orientation plays a decisive role. Companies that adopt an ambidextrous strategy—effectively balancing defensive actions (cost optimization) with offensive initiatives (innovation and expansion)—are more likely to achieve superior financial outcomes compared to firms that are either overly conservative or excessively risk-taking.

Furthermore, industry competition intensity and ownership structure (e.g., state-owned enterprises or large-scale corporations) create heterogeneous advantages, influencing the extent to which firms can fully capture the “digital dividends” generated by digital transformation [1].

Module 2: Core phenomenon – the degree of digital transformation penetration

The process of digital transformation within firms does not occur instantaneously; rather, it unfolds as a staged and progressive penetration. The input component of the model captures the degree of digital transformation penetration, encompassing three evolutionary stages from low to high: digitization—the conversion of physical information into digital formats; digitalization—the use of technologies to modify and optimize existing business processes; and full-scale digital transformation—a firm-wide transformation that reshapes business models and redefines value creation [4], [11], [12].

Structurally, this penetration is built upon the close integration between core digital technologies—such as artificial intelligence, big data, cloud computing, and blockchain—which serve as foundational infrastructure, and practical technological applications tailored to specific industries and business contexts [2], [13].

Module 3: Transformation mechanisms – the “black box” of change

Digital transformation does not directly generate profits; rather, its value creation must be understood through the mechanisms by which digital technologies restructure internal management processes. This transformation mechanism operates through three key pillars: technology, organization, and external networks.

From a technological perspective, digital transformation shifts research and development (R&D) from intuition-driven approaches toward more systematized processes, enabling firms to shorten innovation cycles, reduce experimentation costs, and increase the output of technological innovations (e.g., patents) [8], [14].

From an organizational perspective, digital technologies both require and facilitate human capital upgrading. They gradually replace manual labor by increasing the proportion of highly educated employees, thereby enhancing overall organizational capability. At the same time, digital transformation contributes to flattening organizational structures, accelerating information flows, and improving managerial efficiency [1].

From a network perspective, digital transformation enables firms to expand transaction channels, reduce dependency and concentration within supply chains [8], and enhance the

transparency of internal information. This increased transparency, in turn, strengthens market recognition and improves evaluations from capital market participants.

Module 4: Output outcomes – enhancing financial management efficiency and maximizing firm value

The comprehensive changes generated by the transformation mechanisms in Module 3 lead directly to the expected outcomes in Module 4. First, the adoption of intelligent systems enables firms to eliminate excess inventory and reduce equipment downtime, thereby increasing total asset turnover and directly improving free cash flow.

This operational optimization translates into significant improvements in key profitability indicators, including return on assets (ROA), return on equity (ROE), and earnings per share (EPS). Ultimately, the combined effects of improved cash flow, enhanced financial performance, and the ability to access lower-cost capital are recognized by capital markets and reflected in the firm's long-term valuation, often measured by Tobin's Q [2].

4. DISCUSSION

4.1. Result

The findings indicate that digital transformation has a positive impact on the effectiveness of corporate financial management in the context of the rapidly evolving digital economy. The adoption of digital technologies has significantly changed the way financial information is collected, processed, and analyzed, thereby improving management quality and supporting more accurate and timely financial decision-making.

First, digital transformation enhances the transparency and accuracy of financial information. When firms implement integrated management systems such as Enterprise Resource Planning (ERP), financial data can be updated in real time and centrally stored on a unified platform. This contributes to improving accounting practices, internal control systems, and firms' ability to monitor their financial conditions.

In addition, digital transformation helps optimize cash flow management through data analytics tools and modern financial management systems. These technologies enable firms to monitor cash flow more accurately, forecast capital requirements, and identify potential financial risks at an early stage.

The findings also reveal that technologies such as artificial intelligence (AI), Big Data, and Blockchain play important roles in improving financial management efficiency. AI supports financial statement analysis, revenue forecasting, and fraud detection; Big Data facilitates the processing of massive datasets for financial forecasting purposes; while Blockchain enhances transparency and security in financial transactions.

Furthermore, the automation of accounting and financial processes helps firms reduce management costs, minimize data-processing errors, and improve labor productivity. However, the study also highlights several challenges in implementing digital transformation, including high technology investment costs, shortages of digitally skilled human resources, difficulties in changing managerial mindsets, and risks related to data security.

4.2. Discussion

The findings suggest that digital transformation is no longer merely an operational support tool but has become a strategic factor in corporate financial management. These results are consistent with the perspectives of Verhoef et al. [4] and Vial [10], who argue that digital transformation enables firms to restructure their operating models and strengthen competitiveness in dynamic business environments.

The implementation of ERP systems and integrated management platforms contributes to reducing information fragmentation and mitigating information asymmetry within firms. This demonstrates the important role of digital technologies in improving the quality of financial information and supporting managerial decision-making.

Moreover, the study confirms the increasingly important role of AI and Big Data in corporate finance activities. These technologies not only support process automation but also enable firms to shift from experience-based management toward data-driven management models. This transition is particularly critical in increasingly complex and volatile business environments.

However, the findings also indicate that the effectiveness of digital transformation largely depends on organizational capabilities and firms' adaptability. High investment costs, limitations in digital human resources, and data security risks remain significant barriers, particularly for small and medium-sized enterprises (SMEs). This implies that digital transformation is not solely a technological issue but is also closely associated with managerial strategy, organizational culture, and cross-departmental coordination.

In addition, the study suggests that firms should develop digital transformation strategies aligned with their long-term development objectives rather than implementing technology in a fragmented manner. Combining technological investment with human capital development and risk management capabilities will be a key determinant in enabling firms to fully capture the financial benefits generated by digital transformation.

5. CONCLUSION

5.1. Conclusion

In the rapidly evolving digital economy, digital transformation has become essential for firms seeking to improve operational efficiency and maintain competitive advantage. This study examines the role of digital transformation in enhancing corporate financial management through a qualitative approach and literature review. The findings reveal that digital technologies provide significant benefits for firms.

Digital transformation improves the transparency and accuracy of financial information through integrated financial management systems, enabling more effective monitoring and timely decision-making. In addition, technologies such as data analytics and artificial intelligence enhance financial forecasting, optimize cash flow management, and improve resource allocation efficiency. Furthermore, the automation of accounting and financial processes helps reduce management costs, increase labor productivity, and minimize data-processing errors. However, firms also face challenges in implementing digital transformation, including high technology investment costs, shortages of digitally skilled labor, and data security risks. To fully realize the benefits of digital transformation, firms should develop strategies aligned with their organizational characteristics and long-term objectives while investing in technological infrastructure, workforce training, and risk management systems. Government support through digitalization policies and infrastructure development also plays an important role in facilitating this process.

Overall, this study contributes to clarifying the role of digital transformation in enhancing corporate financial management efficiency and provides important managerial implications for firms in the digital economy. Nevertheless, the study has certain limitations, as it relies solely on qualitative methods and literature review. Future research could be extended by employing quantitative approaches or empirical analyses to further examine the impact of digital transformation on financial performance across different contexts.

5.2. Managerial implications for firm

Based on the above findings, this study derives several important managerial implications for executives and financial managers:

From isolated IT projects to strategic resource orchestration: Rather than focusing solely on technology acquisition, managers should embed digital transformation into specific financial objectives (e.g., reducing inventory turnover cycles, optimizing cash flow). Firms are encouraged to adopt an ambidextrous strategy—combining defensive thinking (cost control and efficiency enhancement) with offensive initiatives (platform-based product innovation)—to maximize profitability while avoiding excessive conservatism or fragmented, high-risk investments.

Integrating environmental resilience and ESG into ROI frameworks: Executives should incorporate physical risks associated with climate change into stress-testing processes when evaluating technology investments. Aligning digital transformation with ESG strategies enables firms to build reputational capital, attract patient long-term funding, and alleviate financial pressures during the transition phase.

Managing resource risks and upgrading human capital: Firms should establish protected budgets for core R&D activities to prevent excessive investment in AI and digital transformation from crowding out traditional innovation resources. At the same time, rather than using technology solely for workforce reduction, firms should invest in upgrading employees' digital skills and align compensation with long-term firm value, thereby fostering inclusive and sustainable organizational prosperity.

Scaling strategies according to firm characteristics: Large firms or state-owned enterprises should leverage their scale advantages to develop centralized data platforms. In contrast, small and medium-sized enterprises (SMEs), which often face capital constraints, should adopt lean digital transformation approaches by focusing on specific operational bottlenecks (e.g., demand forecasting or supply chain management) instead of broad, dispersed investments, thereby generating quicker cash flow improvements.

5.3. Policy implications for government and regulatory authorities

To support firms in effectively transforming digital technologies into financial and economic value, governments and policymakers should prioritize the following areas:

Strengthening digital infrastructure and financial systems: Given that digital transformation is a long-term investment project heavily dependent on external connectivity, governments should continue upgrading digital infrastructure (e.g., broadband, fiber optics, and 5G networks) to help firms overcome the “productivity paradox.” At the same time, developing a diversified financial services system is essential to address capital constraints, enabling firms—particularly SMEs—to navigate the initial, often costly stages of digital transformation.

Providing targeted support packages and promoting green technologies: Policymakers should design targeted financial incentives (such as tax credits and subsidies) specifically aimed at encouraging the adoption of environmentally friendly digital technologies that are resilient to climate change. In addition, supportive policies should be implemented to protect and assist private firms and those operating in less competitive industries, which are more vulnerable to lagging behind in the digital transformation process.

Standardizing digital and ESG disclosure frameworks: Regulatory bodies (e.g., securities commissions and ministries of finance) should introduce mandatory or incentivized disclosure requirements related to digital assets and firms' exposure to climate-related risks. Such

measures would reduce information asymmetry, facilitate more accurate valuation in capital markets, and contribute to building a transparent and sustainable digital economy.

Regulating income distribution and agency costs: Macro-level intervention is necessary to monitor the appropriateness of executive compensation structures in digitally transformed firms. Establishing mechanisms that guide firms toward a fair distribution of “digital dividends” can help mitigate income inequality and address agency-related concerns within organizations.

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