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DRIVING FACTORS AND PATHWAYS OF DIGITAL TRANSFORMATION IN CHINESE RETAIL ENTERPRISES：A LITERATURE REVIEW

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ABSTRACT

In the context of the digital economy, enterprise digital transformation has become a key focus in both academic research and practical applications. However, existing studies remain fragmented, particularly lacking systematic research on the digital transformation of retail enterprises in China. Therefore, this study employs the "planning-review-analysis-integration-evaluation" framework and uses a systematic literature review to examine research on the drivers, practical effects, and empirical findings of digital transformation. The study aims to reveal the development trajectory, key research themes, and theoretical frontiers of digital transformation, construct an integrated framework, and provide clear guidance and valuable insights for future research.

JEL classification: *L81, O33, L21*
Keywords: *Digital Transformation; Business Digitalization; Digital Innovation; Technological Innovation.*

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1. INTRODUCTION

With the rapid advancement of the digital economy, the global landscape is undergoing profound transformations. Digital technologies are fundamentally reshaping value creation, resource allocation, and business processes. In this context, digital transformation has moved beyond mere technological innovation to become a core strategy for driving sustainable enterprise growth and long-term development, and it is recognized as a key issue in the new economic era (Ancillai *et al*.,2023; Caputo *et al.,* 2021).

As a key driver of the digital economy, China has achieved significant progress in enterprise digital transformation under the dual influence of policy guidance and technological advancements. As a vital link between production and consumption, the retail sector faces challenges such as evolving consumer demands, intensified competition, and blurred industry boundaries. In response, retailers are leveraging

digital technologies to optimize operations, reshape processes, and innovate business models (Chen *et al.*, 2024). However, despite its great potential, research on digital transformation remains limited, particularly in terms of pathways, impact mechanisms, and long-term effects (He *et al.*, 2025).

This study focuses on digital transformation, systematically reviewing the academic community's evolving understanding of its connotations and extensions. Based on this foundation, the study summarizes key drivers of digital transformation and its impact on enterprise operations, innovation, and market adaptability while identifying trends in research methodologies to reveal the research landscape and future directions in this field. Additionally, this study analyzes existing research gaps and proposes potential future research avenues, providing theoretical support for further exploration and practical insights for the high-quality digital transformation of China's retail enterprises.

2. DEFINITIONS AND THEORETICAL FOUNDATIONS

2.1 Defining digitalization and digital transformation

Based on the review of relevant literature, this study defines digitalization as a systematic process in which enterprises utilize digital technologies and resources to optimize internal processes, strengthen external collaboration, and adapt to rapidly changing environments, ultimately achieving value creation and strategic objectives.

The definition goes from a single technology field to a multidimensional interdisciplinary integrated framework for digitalization changes. At the onset, digitalization was understood to be using binary computing formats. In research, its connotation, accompanied by digital technology improvement, gradually extended to enterprise value creation and was ultimately regarded as improving enterprise value using digital technology. The digitalization concept itself has now embraced the notion of, being driven by different applications in different enterprises, and being acknowledged as not only the key force leading technology driven business transformation but also, due to its extraordinary influence on the industrial and all other social aspects, as the dynamic process of the industry transformation (Wu *et al.*, 2024).

With the rapid pace of digitalization in technology, enterprise value, and industry transformation, its boundaries have expanded, leading to a broader concept of digital transformation, defined as the process of digitalization and its implications (Feliciano-Cestero *et al.*, 2023). The academic community offers various interpretations of digital transformation. Some define it as the use of digital technologies to enhance business operations (Seppänen & Saunila, 2025), while others view it as a shift in the production model and organization. More recent studies adopt a broader perspective, making a case for its role in linking technology to organizations, enhancing new actors and governance frameworks, and transforming business strategy and value systems (Xue *et al*., 2023).

As such, the definition of digital transformation has moved from business optimising to organisational change and to a systematic transformation framework for technology, business and management.

2.2 Theoretical foundations of digital transformation

Scholars have explored the mechanisms and pathways of digital transformation from multiple theoretical perspectives, thus creating a multi-dimensional theoretical framework.

The theoretical support in this case lies in strategic management theory, which highlights strategic adaptation as the means to digital transformation. Early studies claim that firms must change their strategies concerning internal and external environmental changes (Andrews, 1971), and later works argue that market competition and technological advancement are primary reasons for strategic transformation (Ginsberg, 1988). In a globalized setting, strategic orientation is considered pertinent in dealing with the difficulties of digital transformation (Wen *et al*., 2022). Although this theory provides an organised framework for determining environmental changes, developing adaptive tactics, and maximising the distribution of resources, in its conventional focus on competitive edge and market adaptation, it does not consider this uncertainty and dynamic adjustability particular to the digital period.

Dynamic capability theory, which underlies why firms typically struggle to handle, or even address, environmental uncertainty, turns to strategic management theory to examine how they use digital transformation to create organizational flexibility. According to research, firms must be able to make strategic adjustments regularly in response to external shocks and enhance competitive advantages in highly dynamics environments (Chen & Tian, 2022). However, this theory focuses mainly on creatively responding to the external environmental drivers of digital transformation without much emphasis on how firms need to restructure internally to support the digital transformation.

It should be framed from the perspective of organizational change theory, which focuses on the internal transformation and how firms adjust their organizational structure, culture, and business processes to facilitate digital transformation. According to the studies, the primary motive for digital transformation is the benefits of improving operational efficiency and decision-making while moving away from the historical model and toward an integrated business model (Boffa & Maffei, 2023). This theory is applicable in several magnitudes in the manufacturing and service industries. Still, focusing purely on organizational management and process optimization leaves room for inter-organizational collaboration and ecosystem integration in digital transformation.

As digital transformation requires not only internal adjustments but also integration of external resources for further sustainable competitive advantages, the resource-based view (RBV) adds to the research framework when applying such view from a traditional innovator. According to RBV, digital transformation is a strategic step to restructure resources (Mishra & Gunasekaran, 2024). In the turbulent environments, firms need to transform offline resources into integrated online-offline competitive advantages and transform resource configuration to achieve the transformative development. One argument put forward by RBV is that a company needs to utilise its set of unique resources and capabilities to sustain its competitiveness in the long term. However, the RBV provides limited insight into how firms acquire and integrate external resources to advance digital transformation.

Ecosystem theory broadens the digital transformation research frontier from the organizational boundaries to cross-organizational integration and industry-level collaboration. According to this theory, firms must cooperate with suppliers, partners and customers to develop value co-creation ecosystems (Nambisan *et al.*, 2019). Digital transformation has evolved from traditional vertical integration to modular, shared platforms and ecosystem-based models (Li *et al.*, 2024). In the retail sector, for instance, firms are fostering consumer-centric digital ecosystems by strengthening collaboration across supply chains and deepening partnerships with technology and financial industries to form highly complementary digital ecosystems. However, the dynamic evolution of ecosystems and the challenge of coordinating diverse stakeholder interests remain key areas for further research.

Overall, these theories complement one another, forming a systematic analytical framework that spans environmental adaptation, strategic alignment, organizational restructuring, resource integration, ecosystem collaboration, as shown in Figure 1. Strategic management theory establishes the foundation, dynamic capability theory enhances the focus on external adaptability, organizational change theory highlights the need for internal restructuring, RBV introduces a resource optimization perspective, and ecosystem theory explains the broader networked nature of digital transformation. This integrated framework offers valuable theoretical insights for firms navigating complex environments and striving to sustain competitive advantages through digital transformation.

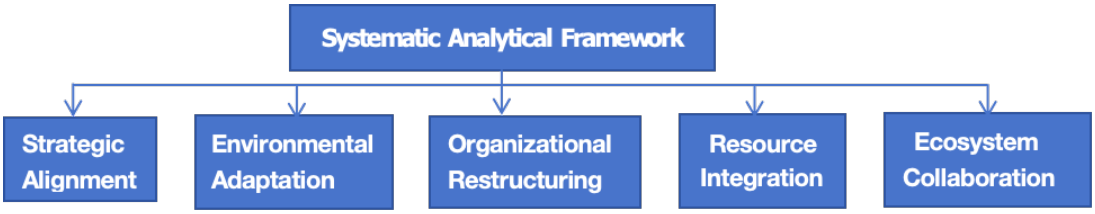

Figure 1: Systematic analytical framework

3. METHODOLOGY

3.1 Research framework

This study adopts the Systematic Literature Review (SLR) method to construct a structured research framework (Yang *et al.*, 2024), following the "planning-review-analysis-integration-evaluation" logic to develop. It systematically analyzes relevant literature across three core dimensions: drivers of digital transformation, impact assessment, and empirical research, as shown in Figure 2. The study aims to synthesize existing theories, identify key research topics, and integrate diverse perspectives to explore the intrinsic mechanisms and development paths of digital transformation in China's retail sector. By mapping the research landscape, this study provides theoretical support for future research and practical applications in the field.

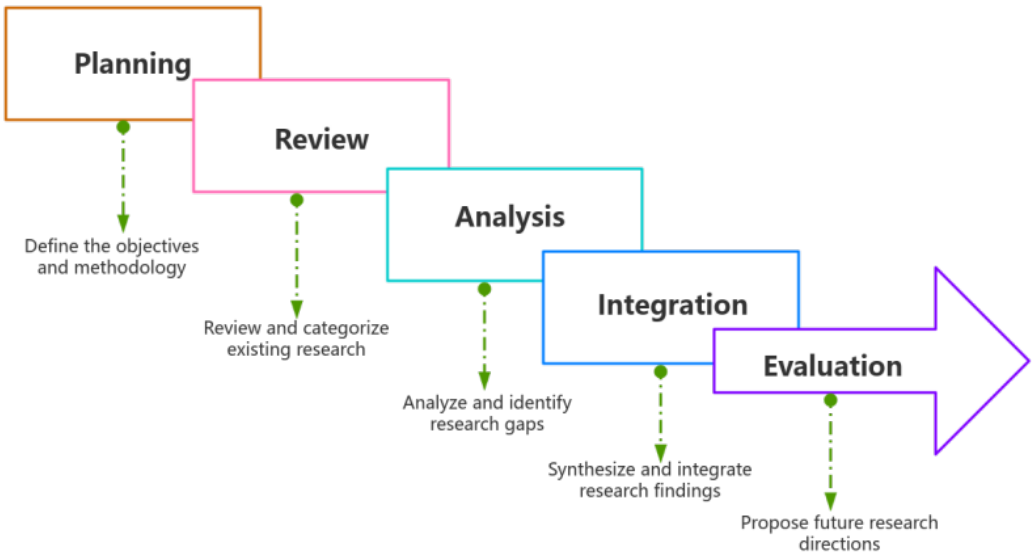

Figure 2: Research framework

3.2 Data collection

This study adopts a multi-source data collection strategy, integrating academic literature, policy documents, industry reports, and corporate case studies to ensure comprehensive, authoritative, and industry-relevant data, thereby providing a solid theoretical and empirical foundation for subsequent research.

Firstly, in terms of academic literature, this study conducts a systematic search using Elsevier's ScienceDirect and China National Knowledge Infrastructure (CNKI) to retrieve relevant academic literature. Keywords such as "digitalization", "digital transformation" , "business digitalization" and "digital innovation" are used to obtain high-quality research relevant to the study's theme. To ensure research rigor and timeliness, only articles (document type: "article") published between 2012 and 2023 are included. The initial search retrieved 6,621 articles. To maintain a focus on business management, studies primarily centered on technological upgrades rather than enterprise management and those unrelated to China's retail industry were excluded. After screening 742 highly relevant articles were retained as the final dataset for this study.

Secondly, data is collected from official Chinese government websites, and the reporting is from leading third-party research institutions such as Deloitte, International Data Corporation (IDC), and iResearch for policy documents and industry reports. Statistical yearbooks, government reports, and industry white papers are included to keep policy and industry context accurate.

In addition, the corporate case studies herein mainly rely on reports from China Chain Store & Franchise Association (CCFA), which supply first-hand information of China retail enterprises' digital transformation practices and illustrate one of the industry excellence cases.

This study summarizes that a multi-source data collection approach allows systematic and multidimensional data coverage and provides a solid theoretical basis and empirical evidence for the exploration of corporate digital transformation.

4.0 DATA ANALYSIS AND FINDINGS

4.1 Data analysis

This study employs bibliometric analysis to visually examine the literature on digital transformation in retail enterprises (Jiang *et al*., 2023). Using CiteSpace software, it conducts co-citation and keyword co-occurrence analyses to systematically map the knowledge structure and evolutionary trends within this research domain.

Through co-citation analysis (see Figure 3), it is evident that prior to 2019, research in this field was relatively fragmented, primarily focusing on digital technology, e-commerce, and enterprise information systems. The research gained momentum between 2020 and 2022, with a strong emphasis on business model innovation and digital capability development. Additionally, the driving factors of digital transformation, such as consumer behavior and policy environment, have gradually emerged as new research hotspots. At the same time, studies on AI-enabled retail and blockchain-enabled supply chain management have seen a significant increase in co-citation frequency, indicating that intelligent, data-driven business model innovation will continue to be a key trend in future research.

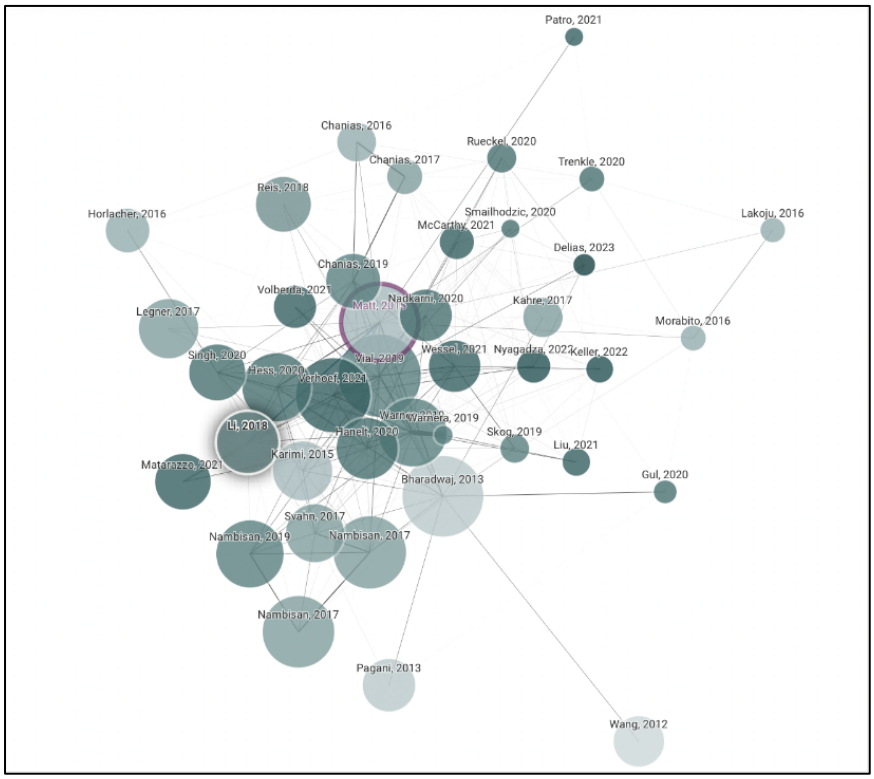

Figure 3: Co-Citation network with influence distribution

Further keyword co-occurrence analysis was conducted to identify the research focus areas and their interrelationships within the field of digital transformation, with the results presented in Figure 4. The research on digital transformation in retail enterprises can be categorized into four key areas: strategy, performance, environmental factors, and pathways. The strategy area focuses on "Digital Transformation" and "Business Strategy", examining how enterprises formulate digital transformation plans. The performance area includes "SCM (Supply Chain

Management)" and "ESG Performance", exploring how digital transformation enhances operational efficiency, optimizes resource allocation, and promotes sustainable development. The environmental factors area revolves around "Environmental Performance", highlighting how external environments, policy regulations, market dynamics, and financial systems influence the digital transformation process of enterprises. The pathways area consists of "New Retail Model", "AI", and "Omnichannel Retail", focusing on the practical implementation of digital transformation in retail enterprises and exploring how digital technologies drive industry innovation.

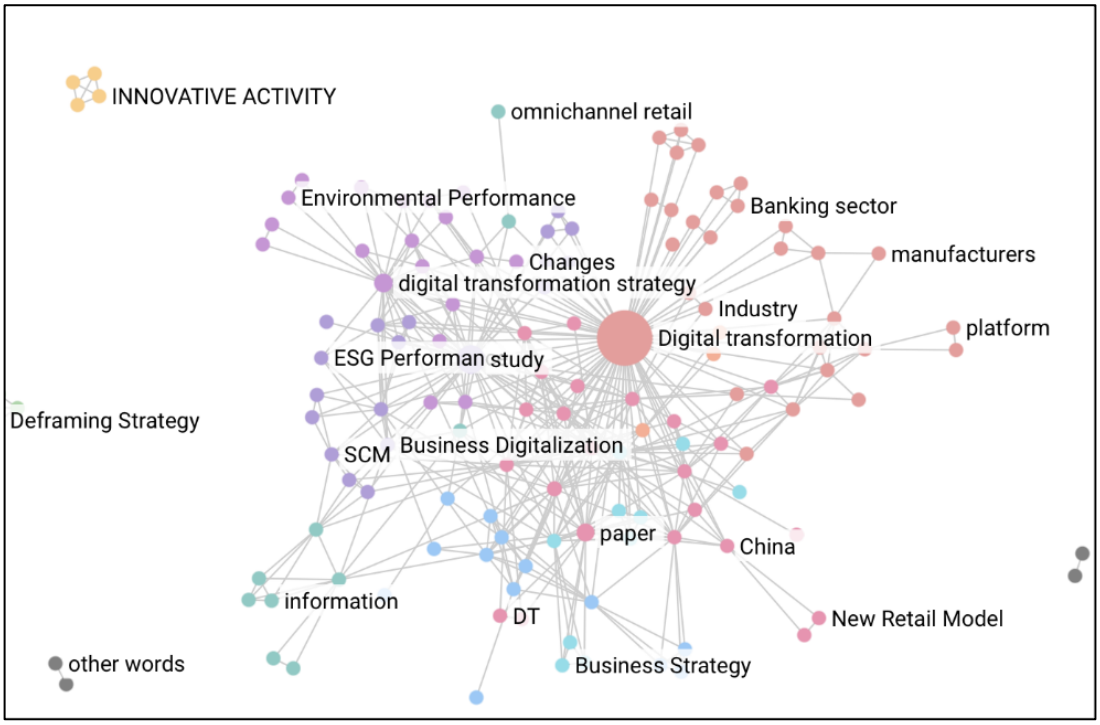

Figure 4: Keyword Co-Occurrence network of digital transformation

4.2 Findings

4.2.1 Driving factors of digital transformation

The driving factors of digital transformation in retail enterprises are external and internal factors considered in relevant research. External factors, such as policy environment, technological advancement, market shift, and competition among the digital economy, drive digital transformation. On the other hand, internal factors, including corporate strategy, organizational culture, and managerial capabilities, determine whether enterprises can leverage external conditions efficiently and achieve digital transformation goals.

Recently, worldwide governments have been developing many policies to favor enterprise digital transformation from the view of external factors. For example, since China proposed the "National Big Data Strategy" in 2015, it has successively introduced policies on digital economy development plans and industrial digitalization promotion, providing institutional guarantees for enterprise digital transformation. And meanwhile, local governments have also made policies

according to their economic characteristics, which further creates a suitable environment for transformation and promotes the construction of a data-driven economic ecology.

Furthermore, breakthroughs in digital technology are constantly being made, which provides a fundamental basis for enterprises' digital transformation (Nambisan *et al.*, 2019; Shi *et al.*, 2024). Digital technology is gradually embedded into enterprises' business operation processes, management modes, and supporting systems, which promote the innovation and business model transformation to achieve digital transformation. In the meantime, a change in market demand and the intensified industry competition also function as the key drivers for digital transformation (Matt *et al*., 2024; Fang & Liu, 2024). First, enterprises strive to enhance their digital capabilities to meet consumers' growing demand for digital services and personalized experiences. However, enterprises in a more competitive market environment must use innovation and differentiation to maintain competitive advantage. Given this, enterprises must and shall always find digital solutions to tackle these market challenges and achieve sustainable development.

In addition to external factors, enterprise digital transformation is also significantly driven by internal factors, including strategic planning, managerial capabilities, and organizational adaptation. Strategic planning provides direction for digital transformation by guiding resource allocation and capability development (Gupta & George, 2016; Kroh *et al.*, 2018; Liu & Li, 2021). Managerial digital governance, resource integration, and dynamic capabilities directly influence the effectiveness of implementation. Meanwhile, organizational change plays a crucial role in translating digital strategies into actionable outcomes. Furthermore, business process optimization and business model innovation are vital to enhancing transformation performance. In particular, aligning organizational restructuring with the demands of digital transformation is essential for strengthening digital capabilities. Recent studies also emphasize the importance of internal capability coordination and digital leadership in facilitating successful transformation (Zhao *et al*., 2024; Rizana *et al*., 2025).

The interaction between internal and external factors is essential to the enterprise digital transformation. When driven by external network effects and internal capability enhancement, enterprises can complete efficient resource allocation, comprehensive capability improvement, and profound strategic transformation, providing a solid foundation for sustainable digital development.

4.2.2 The impact and assessment of digital transformation

It has been shown that digital transformation exceeds the enterprise level of influence and extends to industrial upgrading and economic growth. At the enterprise level, digital transformation drives business model innovation, optimizes operational management, and strengthens market competitiveness. It promotes high-quality economic development and enhanced labor productivity, while at the macro level, it fosters industrial collaboration and technological innovation.

Digital transformation in the context of business model innovation has fundamentally transformed the mechanisms of value creation and resource integration in enterprises. Platform economies and sharing models further promote resource integration and matching, thereby enhancing firms' value creation capabilities (Sun, 2024). At the same time, digitalization also changes the logic of value creation,

transforming consumers from passive recipients to active co-creators, profoundly embedding them in the business process, and creating a virtuous circle of interactive experiences to continuously evolve the business models (Zhang & Xia, 2024). Finally, apart from demand creation, business design, and digital business network, data-driven business ecosystems also emerged to reinforce interfirm value co-creation and dynamic competitive capabilities (Zeng *et al.*, 2022). The digital transformation serves as a way for enterprises to release from the traditional value creation framework, design more adaptive product and service models, enjoy precise market alignment and deep user engagement, making innovation efficiency and business model scalability possible. Empirical research also reveals that the level of digital maturity and the capacity of innovation based on the business models are strongly correlated. Those firms that possess a higher degree of digitalization have broader and more developed models of innovation, significantly improving the performance and competitiveness in the market.

In terms of operational management optimization, digital transformation has fundamentally reshaped corporate management models, improving operational processes, enabling business model innovation, enhancing data-driven decision-making, and optimizing resource allocation, thereby strengthening firms' competitive advantages (Huang & Wang, 2022). Therefore, first, digitalization quickens the improvement of the business model, allowing enterprises to bet on more of what the market needs and employ intelligent recommendation systems and precision marketing to strengthen customer retention and brand influence (Liu *et al*., 2024). Secondly, data analytics and artificial intelligence help reinforce corporate strategic decision making where firms can leverage real-time data insights and predictive analytics to quickly adjust to the markets, enhance their strategic agility and so preserve their first mover advantage (Kim & Seo, 2023). Furthermore, digital transformation also improves the efficiency of resource allocation, enhances the precision of factor allocation, cuts down the operational costs and resource waste of enterprise, and enhances enterprise profitability and sustainability (Lü & Li, 2022). Digital transformation also enhances strategic flexibility by scaling down the lead time of enterprise business strategies to respond to competitive pressures and to take advantage of market opportunities.

A typical example is Uniqlo, which has been transforming digitally since 2017, by optimizing its supply chains, inventory management, online-offline channel integration, and big data analytics. Moreover, these initiatives have helped to improve operational efficiency and market competitiveness. Despite increasing economic uncertainties, Fast Retailing's FY2025 Q1 financial results still indicate strong growth in Uniqlo's sales and earnings, proving that digital transformation improves operation flow and cements its market supremacy.

At the same time, digital transformation is an essential engine for industrial upgrading and economic growth beyond its firm's level. In the aspect of information technology, the extensive application of digital technologies has promoted the data sharing and industrial collaboration widely, which alleviate the resource allocation and factor mobility and enhance the growth of total factor productivity (TFP) and the speed of industry integration among upstream and downstream across industries (Cheng *et al.*, 2023). On the contrary, digitalization has enabled firms to commercialize innovations quickly thanks to technological developments in terms of increasing the speed of commercialization cycle of innovations, accelerating the

transition of technological developments from conceptualizing of R&D outputs into market applications resulting from improved tangible productivity (Wu *et al.*, 2022). Besides, this transformation will improve economic development quality and efficiency to some extent through the technological upgrading of the industry and corporations' improved innovation capacity.

Overall, digital transformation not only optimizes enterprise operations and enhances market competitiveness at the micro level, but also drives industrial restructuring and promotes high-quality economic development at the macro level. In the future, firms need to enhance data governance capabilities, adapt organizational restructuring strategies, and deepen collaboration with the industrial ecosystem to build up a more resilient and sustainable framework of digital development, to fully realize the long-term value of digital transformation.

4.2.3 Empirical research on digital transformation in China's retail enterprises

Empirical evidence suggests that the digital transformation of Chinese retail enterprises remains in an exploration stage (Shan & Gao, 2025), without an established, replicable success model. Over the past decade, development of digital technology has led to significant transformations in the retail industry and at the same time, gave rise to enormous challenges. Most retail units are currently developing omnichannel systems, digital infrastructure, and enhancing the digital abilities of employees toward transforming the businesses at this time. Nevertheless, the overall transformation is still not satisfactory enough and presents large variations in the extent and effectiveness of transformation over various types of enterprises (Wang *et al*., 2023). There are external and internal factors that can explain this phenomenon.

Externally, changes in the market and consumer behavior put pressure on transformation efforts from the outside. However, within enterprises, strategic planning, technological path selection and organizational adaptation affect the pace and effectiveness of digital adoption (Zhao *et al.*, 2024). In general, although Chinese retail enterprises have been full of enthusiasm for pursuing the digital transformation, academic research on this topic is still limited, especially in terms of synthesis of key patterns and underlying mechanisms. This gap furnishes a productive area of research ahead and valuable insights for the industry practitioner.

5.0 CONCLUSION AND RECOMMENDATION

5.1 Recapitulation and contributions

In light of rapid technological advancements, digital transformation has become a crucial pathway for enterprises to attain sustainable development. This study provides a systematic review of the literature on enterprise digital transformation, clarifies its definition and theoretical foundations, and employs bibliometric analysis to examine the research hotspots and trends in digital transformation among Chinese retail enterprises. By constructing an analytical framework, this study identifies key research gaps and outlines future research directions.

In terms of theoretical contributions, this study offers a comprehensive and up-to-date synthesis of existing literature and ongoing research in this domain. It quantitatively evaluates the research landscape of digital transformation in Chinese retail enterprises, providing new insights into the field's development. Additionally, the findings contribute to a deeper understanding of the mechanisms driving digital transformation in retail enterprises.

From a practical perspective, this study offers theoretical insights for retail enterprises navigating digital transformation challenges in China. As many enterprises encounter significant difficulties in this process, it is crucial to identify the key driving factors and transformation pathways that can enhance the effectiveness of digital initiatives.

5.2 Research limitations

Despite systematically reviewing the theories and practices of digital transformation in China's retail sector, this study still faces the following limitations:

First, limited industry generalizability. This research focuses on the retail sector, which is indeed representative within China's digital economy. However, due to its distinct industry characteristics, the digital transformation pathways in retail may differ significantly from those in manufacturing, finance, logistics, and other sectors. Therefore, the findings are more applicable to consumer-oriented enterprises, and caution is needed when applying them to other contexts. Future studies may conduct cross-industry comparisons to enhance the generalizability and explanatory power of the research.

Second, insufficient empirical support. This study primarily adopts bibliometric and content-based approaches to construct a systematic knowledge map and theoretical foundation. However, it does not yet test the applicability or robustness of these findings using real-world data from enterprises or industries. Future research could incorporate empirical data from surveys or public databases to test the relationships between driving factors, thereby strengthening the practical relevance of the theoretical framework.

Third, lack of a systematic behavioral mechanism perspective. While current literature has extensively explored structural aspects such as strategy formulation and resource allocation, there is still a lack of in-depth, systematic analysis of the behavioral drivers within organizations undergoing transformation. Although some studies have touched upon behavioral variables at the individual or organizational level, the underlying theoretical foundations remain unclear and the pathways are fragmented. Future research could adopt a behavior-oriented lens to explore how cognitive expectations and decision-making judgments influence transformation decisions in a context of technological change, thus enriching the explanatory dimension of existing theories.

5.3 Recommendations of Future Research

For future research, the following directions could be explored:

First, conduct cross-industry comparisons to broaden the applicability of the findings. Future studies may extend the scope to other sectors such as manufacturing and services, comparing their driving factors and transformation pathways. This would help identify commonalities and industry-specific mechanisms, thereby enhancing the generalizability and theoretical extension of the research.

Second, focus on the digital transformation practices of small and medium-sized retail enterprises. Compared to large retailers that have largely completed their digital transformation, SMEs often face significant constraints in terms of resources, technology, and talent, resulting in more uncertain and complex transformation paths. Future research could draw on firm-level data and relevant theoretical frameworks to

explore their strategic choices under resource-constrained conditions, providing more targeted theoretical and practical guidance for this group.

Third, deepen the exploration of behavioral drivers. Existing studies primarily emphasize technology and resource-based perspectives, with limited attention to the role of internal behavioral actors in the transformation process. Future research may adopt a behavior-oriented perspective to examine how behavioral intentions influence firms' willingness and pathways for digital transformation under emerging technological conditions, thereby enriching the micro-level explanatory mechanisms of transformation.

Fourth, focus on long-term performance and the sustainability of transformation efforts. Current studies tend to emphasize short-term efficiency gains in the early stages of transformation, while paying less attention to long-term value creation. Future research could adopt a dynamic performance perspective to examine how digital transformation impacts long-term competitiveness and sustainable development.

These research directions will further enrich the theoretical framework of digital transformation, provide practical guidance for retail enterprises, and contribute to high-quality industry development and sustainable economic growth.

5.4 Conclusion

This study systematically reviews the driving factors, transformation impact, and key challenges of digital transformation in China's retail enterprises. The findings indicate that digital transformation has become a core pathway for retail enterprises to enhance competitiveness by driving business model innovation, optimizing operational management, and improving market responsiveness. From the perspective of driving factors, policy support, technological advancements, market demand shifts, and intensified industry competition collectively promote enterprise transformation. Government policies drive infrastructure development, while enterprises accelerate digital upgrading through omnichannel retail, intelligent supply chains, and other models. Internally, strategic planning, managerial digital capabilities, and organizational change are critical determinants of transformation effectiveness.

Empirical research on Chinese retail enterprises shows that despite active efforts to advance digital transformation and certain achievements in resource allocation optimization and data-driven decision-making, enterprises still face considerable challenges in the overall transformation process. Overall, digitalization provides new momentum for retail enterprises, but transformation pathways and outcomes vary across companies. Moving forward, enterprises should strengthen digital capabilities, optimize organizational change, and deepen ecosystem collaboration to fully unlock the value of digital transformation**.**

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