

XIX. ANALYSIS OF ENTERPRISE DIGITAL TRANSFORMATION UNDER THE BACKGROUND OF “ONE BELT AND ONE ROAD” – A CASE STUDY OF DASHANG TIANGOU

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With the rapid development of digital trade, many real enterprises have gradually joined the wave of transformation and upgrading. Taking Dashang Group as an example, this study deeply discusses the impact of trade digitalisation on enterprise transformation and upgrading. The study finds that digital transformation helps improve enterprises' market competitiveness but also needs to cope with challenges such as technology updates and data security. Finally, this paper puts forward policy recommendations and points out research limitations and future research directions. This study not only helps to understand the impact of trade digitalisation on enterprise transformation and upgrading but also provides a valuable reference for real enterprises to achieve sustainable development in the fierce market competition.

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1 Introduction And Literature Review

1.1 Background of Research

In today's increasingly deepening globalisation, trade is no longer a simple exchange of goods but involves cultural, political, economic, and other levels of exchange and cooperation. Since the concept of "digital trade" was proposed by the United States International Trade Commission in 2013, it has become the trade direction supported and developed by major economies worldwide. It has also emerged as the core driving force for enterprises in various countries to enhance their competitiveness, bringing vast market opportunities and development potential for traditional trade in goods and services (Hua & Liang, 2024).

The theoretical framework of trade digitalisation primarily involves the application of information technology, developing e-commerce, optimising supply chain management, and innovations in cross-border payment systems. With the rapid development of digital technology, studies on enterprise transformation and upgrading have gradually increased, offering suggestions for promoting the optimisation and upgrading of industrial structures (Liu et al., 2024).

As more scholars invest in research, it has been found that the digital transformation of enterprises significantly contributes to improving the value chain (Karrie, 2022). Digital transformation optimises trade processes through technological advancements and enables rapid responses to customer demand, enhancing enterprise competitiveness. Additionally, digitalisation promotes the facilitation and transparency of international trade, gradually becoming a crucial force driving the development of global trade. At the same time, enterprise digital transformation effectively promotes industrial upgrading, and this influence extends across industries through spillover effects (Du & Lou, 2022).

Therefore, the expansion of digital markets and digital technology not only presents broader international market prospects for large enterprises such as Dashang Group but also fosters economic and technological exchanges and cooperation among countries and regions along the Belt and Road Initiative, leading to mutually beneficial outcomes for national industries and export enterprises. However, while enjoying these opportunities, transforming enterprises face numerous challenges,

such as intensified market competition and increasingly diversified customer demands. Although the digital development of Chinese enterprises is progressing well, there remains the issue of imbalanced digital development among enterprises (Wang, 2020).

Thus, studying the impact of trade digitalisation on enterprise transformation and upgrading is of great practical significance and theoretical value.

1.2 Definition of concept

Due to the different regulatory rules of international organisations, the difficulty of quantifying the value of data, and the challenges in differentiating new business models generated by integrated development, there is no unified definition of trade digitalisation. However, the conceptual approach remains broadly consistent. Most scholars refer to the framework established by the International Trade Commission of the United States when conducting empirical research, selecting indicators related to digital trade development to construct a digital trade development index to measure trade digitalisation levels. As a result, there is a lack of uniformity in selecting indicators for measuring trade digitalisation.

Recognising the growing importance of digital trade, the United States International Trade Commission categorised digital trade into four segments in 2013: digital content, social media, search engines, and other digital products and services, facilitating the statistical measurement of digital trade. It also introduced the concept of digitally enabled services; however, broadening the definition of digital trade in this manner may complicate its measurement. Research institutions and scholars worldwide have increasingly focused on digital trade as digital technology advances.

The White Paper on Global Digital Trade (2021) defines digital trade as "the deep integration of digital technology into trade development processes, linking the information interaction and response channels of the production end, trading end, and supply chain end within the industrial chain to build new supply-demand relationships and synergistic relationships, ultimately enhancing industrial chain efficiency." This definition emphasises the digitalisation of trade models.

Professor Ma Shuzhong has provided one of the most comprehensive and authoritative definitions of digital trade among domestic scholars. He describes digital trade as "the efficient exchange of traditional physical goods, digital products and services, digital knowledge, and information through the effective use of information and communication technology, with modern information networks as the carrier. This process facilitates the transition from consumer Internet to industrial Internet and ultimately realises intelligent trade activities in the manufacturing industry" (Ma, Fang, & Liang, 2018).

With the rapid development of the Internet and digital technologies, Ma Shuzhong revised this definition in 2020, refining the "Digital Trade 2.0" concept: "With digital platforms as the carrier, through the effective use of digital technologies such as artificial intelligence, big data, and cloud computing, the precise exchange of physical goods, digital products and services, digital knowledge, and information can be realised. This transformation promotes the shift from consumer Internet to industrial Internet and ultimately leads to intelligent trade activities in the manufacturing industry" (Ma & Pan, 2020). Compared to version 1.0, version 2.0 emphasises the role of digital platforms in trade, better reflecting the digital transformation of trade in the digital era.

In 2023, Dr. Li Cuini put forward a similar perspective, referencing the Digital Trade Measurement Manual released by the OECD. She defined digital trade as "all domestic and international transactions that are digitally ordered and delivered, including international transactions of goods or services realised by digital ordering and digital delivery, as well as domestic trade" (Li, Cui, & Dong, 2023). This definition also incorporates trade in digital services and digital goods.

Other scholars, such as Xiao and Xia, categorised digital trade into broad and narrow concepts, including "goods" as the key distinguishing factor between the wide and narrow definitions of digital trade (Xiao & Xia, 2019).

Some scholars regard value appreciation as the primary indicator of enterprise (or industry) upgrading when measuring enterprise transformation and upgrading. They argue that the higher the value-added rate of an enterprise, the higher its position within the value chain, leading to a more successful transformation and upgrading process (Ma, Zhang, & Wang, 2017).

Other researchers have attempted to quantify enterprise transformation and upgrading through empirical research (Yu, Meng, & Zhang, 2017). However, in the World Bank's survey data on Chinese enterprises, the questionnaire for service enterprises does not include fixed assets, making it impossible to use TFP (Total Factor Productivity) for calculation (Wang, 2020).

As a result, labour productivity has been widely used to represent the transformation and upgrading of service and manufacturing enterprises (Li & Yan, 2018). Sun Zhongjuan and Lu Lan further defined digital transformation as "a process in which multiple attributes of an enterprise (such as business processes, organisational structure, business model, and connection with other actors) undergo significant transformation through the application of digital technology and data resource analysis, achieving organisational objectives more efficiently" (Sun & Lu, 2023). This concept extends digital transformation into a multifaceted framework encompassing various attributes of enterprise development.

1.3 Theory and hypothesis of enterprise digital transformation

With the rapid development of trade digitalisation, more and more real enterprises have begun to explore the road to digital transformation. However, there are still many unknown questions about the impact of trade digitalisation on the transformation and upgrading of enterprises. Before studying these issues, examining the theoretical basis of enterprise digital transformation is necessary.

Dynamic capability theory in the context of the digital economy

According to this theory, dynamic capabilities are the foundation of digital transformation (Xiao, 2017). The dynamic capabilities theory advocates that organisations should adopt an "alliance" management model, enhance employee capability input, establish efficient teams, and introduce modern information technologies to foster communication and collaboration.

Digital platform theory

Digital platform theory posits that to realise the full potential of digital transformation, companies must adopt digital platforms. As key carriers of resource aggregation, digital platforms facilitate cross-border integration, resource sharing, and diversified innovation with the support of digital technologies (Yu, Meng, & Zhang, 2017). Based on this theory, existing research has focused on digital platform services, business model evolution (Zhou & Cheng, 2021), value creation (Feng, Wang, & Zhou, 2022; Zhou, Wenhui, Li, & Li, 2022), platform governance, and other issues.

Combination of dynamic capability theory and digital platform theory

This paper argues that when digital platform theory is combined with dynamic capability theory, firms can establish an operational system that possesses both strong technical capabilities and high adaptability. Specifically, digital platforms provide an extensible framework for enterprises to implement refined operations. At the same time, dynamic capabilities enable firms to flexibly adjust strategies and quickly respond to market changes, facilitating transformation, upgrading, and enhancing competitiveness in an increasingly dynamic market environment.

Hypotheses development

Based on the above theoretical analysis, this paper proposes the following hypotheses:

Hypothesis 1: The trend towards digitisation of trade will prompt firms to use digital platforms to collect and analyse user data to adapt to market changes.

Hypothesis 2: Digital platforms serve as collaboration and innovation hubs, enabling firms to jointly partner with external stakeholders to create more value.

1.4 Research methods and data sources

To verify the above hypotheses, this study will adopt the research method of case study, take Dashang Group, a listed enterprise, as the research object, through a literature review, expert interviews and case analysis, conduct an in-depth analysis of the practice of trade digitalisation of Dashang Group, and deeply explore the influence mechanism of trade digitalisation on enterprise transformation and upgrading. This paper discusses the general law and influence mechanism of trade digitalisation on enterprise transformation and upgrading. As a representative enterprise of China's large retail industry, the trade digitalisation practice of large business Groups has a specific reference value for studying the impact of enterprise transformation and upgrading. The data come from relevant policy documents issued by the government, industry reports, the official website of Dashang Tiangou and relevant public materials. In addition, this study will collect first-hand information through field interviews to enhance its empirical and reliability. In summary, this study will explore the new opportunities and challenges of business transformation and upgrading from the perspective of trade digitalisation to provide useful reference and enlightenment for policymakers and business decision-makers.

2 Case study

2.1 The digital strategic layout of the Dashang Tiangou network

Founded in 2014, Dashang Tiangou is a pioneer e-commerce platform established by Dashang Group in response to the trend of trade digitalisation. It is based on the booming development of China's e-commerce market and the increasingly urgent need to transform the traditional retail industry, aiming to promote trade circulation through digital means. In terms of competitive strategy, Dashang Tiandog emphasises quality and service and has established close cooperative relations with well-known brands at home and abroad. Its competitive strategies include localised service, diversified market entry, and strengthening of partner network. Its business model and service features mainly include:

Online and offline integration. Since its establishment, Dashang Tiangou has been positioned to build an e-commerce platform that integrates online and offline. It provides consumers various online products for an all-around and one-stop

shopping experience. It combines offline resources to ensure commodity quality and service level through physical stores, warehousing, and distribution centres. At the same time, due to the difference between the contracted brands and the purchase channels, the online commodity prices of Tiangou.com are different from those of the offline supermarkets of Dashang Group, which creates price advantages for the commodities of Tiangou.com.

Diversified business forms. In addition to the traditional retail business, Tiangou has also introduced multiple business forms, such as life service. Its business model integrates O2O transactions, online payment, supply chain management and cross-border e-commerce services to form a comprehensive business ecology. Its service features also include providing multi-language customer support and reducing transaction costs caused by language barriers. And streamline cross-border trade processes with one-stop solutions.

Customised services. Dashang Tiangou is mainly positioned in the middle and high-end market, focusing on brand building and consumer experience. As the embodiment of the online operation of Dashang Group, its primary function focuses on the digital business of Dashang Group. Hence, it naturally inherits the member resources of Dashang Group, and the number of registered members has reached more than 30 million. For different consumer groups, Dashang Tiangou launched customised services and products.

With the deepening of digital transformation, Dashang Tiangou has successfully applied digital technology to its business model and operation process, which has had a positive impact. Currently, the Tiangou team has a professional team of 90 people, among which technical research and development personnel occupy an essential position, including research and development personnel, testing personnel, etc. Therefore, its digital technology is mainly independent research and development while jointly developing some technologies with partners, such as cloud services and hardware procurement, to ensure the advancement and practicality of technology.

Business digitalisation. By building a business centre, Dashang Tiangou has realised centralised management and efficient processing of business data, improving business efficiency and decision-making quality and laying a solid foundation for subsequent data commercialisation.

Data commercialisation. Dashang Tiangou has established a data warehouse to mine the value of data deeply through BI tools and data analysis reports. In addition, recommendation systems, precision marketing, and user behaviour analysis make data better served by the business and realise data commercialisation. At the same time, the data management platform ensures data security and compliance, providing a guarantee for the steady development of enterprises.

Technical support for offline business. Dashang Tiangou has developed an MIS system suitable for more than 100 and some comprehensive business forms and realised the comprehensive management of offline business. For electrical business, the ECMS system provides professional solutions to ensure the smooth operation of the electrical industry.

Technical support for online business. In the online field, Tiangou order, ERP and seller centre systems constitute the technical support system of Dashang Tiangou. These systems are suitable for the online management of over 100 and some comprehensive business forms, which not only improve the processing efficiency of online business but also provide convenient management tools for sellers and promote the rapid development of online business.

2.2 Evolution of digital business models

The digital strategy of Dashang Group, relying on the Tiangou team, focuses on two key aspects: technological innovation and data-driven business decision-making. The digital development of Dashang is divided into three evolutionary stages: large-scale, systematic, and intelligent (Jiao, Yang, & Wang, 2021). This framework describes the integration process between the real economy and the digital economy, highlighting the progressive digital transformation undertaken by the company.

The scale of digital platform (2014-2017)

In the early stage of platform formation, amid increasingly intense domestic and international market competition, Dashang Group's management recognised the limitations of traditional trade methods. At the same time, they acknowledged the positive impact of e-commerce on commodity sales, leading them to initiate the development of an international digital platform. During this period, digital

technology applications further enhanced the network effects of physical malls, improving enterprise management efficiency. The Tiangou platform was crucial in supporting enterprises through digital transformation and intelligent operations.

With Dashang Group's digital transformation onset, member services gradually shifted online, offering consumers a more seamless and convenient service experience. By leveraging digital technologies, Dashang Tiangou integrated physical products with application scenarios, enabling offline QR code payments, intelligent parking lot payments, and electronic code verification. Additionally, consumers benefited from in-store self-pickup and logistics distribution options for online purchases, significantly enhancing shopping convenience.

Regarding intelligent operations, Tiangou actively adopted artificial intelligence (AI) to optimise warehousing management, logistics operations, and supply chain management, significantly improving overall operational efficiency. Furthermore, the integrated application of Internet of Things (IoT) technology enabled real-time tracking of goods from production to sale, enhancing supply chain transparency and overall operational efficiency.

To ensure a frictionless payment experience, Tiangou integrated multiple mobile payment methods into the enterprise's service ecosystem, providing a secure and seamless transaction process. Dashang Group adopted the Kingdee system as its core platform in financial management, facilitating centralised financial oversight and regulation at the group level. This ensured financial stability, transparency, and enhanced efficiency in financial monitoring.

By the end of 2017, Dashang Group achieved notable financial improvements, including:

- A net interest rate of 3.18%, reflecting a 0.85 percentage point increase year-on-year.
- Operating costs of 2.069 billion yuan, marking a 5.12% reduction year-on-year.
- Selling expenses of 171 million yuan, demonstrating a 4.79% decrease year-on-year.

- Administrative expenses of 260 million yuan, showing a 9.12% reduction year-on-year.

Systematisation of digital platforms (2018-2021)

Growth Stage of the Platform

During the growth stage of the platform, Tiangou began to develop a platform with trading functions while offering initial and independent supply chain services. At this stage, the platform provided limited online information matching services, requiring each brand to acquire its online marketing capabilities from customer and platform resources.

With technological advancements, enterprises' backend operation systems gradually transitioned to digitalisation, significantly enhancing operational efficiency. Online marketing further expanded business opportunities, mainly through live streaming, crucial during the COVID-19 pandemic, helping businesses continue operations despite store closures. Additionally, unified and centralised distribution services became instrumental during this period, with Dashang Group even serving as a government-designated distribution point, fully demonstrating the adaptability of the enterprise.

Regarding inventory management, the Tiangou team digitally transformed Dashang Group's inbound and outbound warehousing system, ensuring seamless commodity operations. Within the marketing process, Tiangou's "In-flight Shopping Guide System APP" enabled precision marketing by tagging customer preferences and sending timely reminders. This innovation significantly enhanced the efficiency of shopping guides, offering consumers a more personalised shopping experience through continuous improvements in marketing tools, such as the "Dashing Intelligence Chain System" The company further leveraged shopping guide potential.

Social E-Commerce Transformation

Tiangou actively embraced social e-commerce transformation, utilising social media platforms to develop diverse social e-commerce functions. These efforts not only strengthened consumer interaction but also boosted user engagement. The deep integration with WeChat Enterprise facilitated data synchronisation with the "In-flight Shopping Guide System APP", improving customer management mechanisms and service efficiency.

Additionally, the comprehensive integration of the Tiangou Mini Program, official APP, and corporate WeChat account helped physical stores overcome time and space limitations, enabling broader customer engagement. This strategy enhanced brand awareness and introduced new growth drivers for physical retail stores.

Financial Performance by 2021

By 2021, Dashang Group achieved notable financial growth, reflected in the following performance indicators:

- Operating profit: 1.204 billion yuan, an increase of 19.92% year-on-year.
- Net profit margin: 8.85%, marking a 43.9% increase year-on-year.
- Operating costs: 4.786 billion yuan, representing an 11.27% decrease year-on-year.
- Operating profit: 1.123 billion yuan, up 11.85% year-on-year.
- Selling expenses: 969 million yuan, down 4.15% year-on-year.
- Administrative expenses: 802 million yuan, rising 19.52% year-on-year.
- Inventory: 4.204 billion yuan, an increase of 5.73% year-on-year.
- Employee compensation payable: 68 million yuan, down 17.07% year-on-year.

Intelligent digital platform (2022 -- now)*Mature Stage of the Platform*

In the mature stage, Tiangou has developed the capability to provide enterprises with end-to-end supply chain services. By leveraging digital tools and services, the platform enables more accurate and comprehensive data acquisition, fostering a

deeper understanding of resource allocation and consumer demand. This lays a solid foundation for enhancing core enterprise competitiveness, facilitating operational upgrades and international expansion.

With the continuous evolution of digital technology, managers are focused on integrating digital applications into business operations, effectively enhancing operational efficiency. During this process, implementing Dashang Intelligence Chain mini-programs, data assets, AI-driven analytics, data heat maps, and various patented technologies provides strong technical support for enterprise development.

Data-Driven Decision-Making

The data-driven decision-making model has become a key strategic tool for enterprises. Through big data analytics, companies can monitor consumer demand and market trends in real-time, providing precise data support for business decisions. Dashang Tiangou applies AI-driven marketing, utilising advanced algorithms to analyse user behaviour, enabling accurate product recommendations.

Additionally, cloud computing infrastructure ensures platform stability and secure data backups, while transaction security measures protect consumer data. Integrating intelligent recommendation systems further enhances the user experience by analysing consumer behaviour and shopping habits and delivering personalised product suggestions that meet individual shopping preferences.

AI technology has significantly improved response times and service quality in the customer service sector, ensuring that consumer inquiries and requests are addressed promptly and effectively. This data-oriented decision-making model enables enterprises to maintain a competitive advantage in an increasingly dynamic market environment.

Cross-Border Expansion and Belt and Road Initiative

By combining digital operations with physical retail, Tiangou has actively expanded into cross-border business, initiating international operations in 2018 and planning to enhance its platform system by 2024. In cross-border e-commerce, enterprises

have aligned with the Belt and Road Initiative, engaging in strategic collaborations with Russia, New Zealand, and other participating countries and regions.

This expansion strategy has broadened the consumer market and introduced a more diverse range of product offerings to customers. Through cross-border partnerships, Tiangou drives international trade growth, supporting economic cooperation and technological integration across Belt and Road countries.

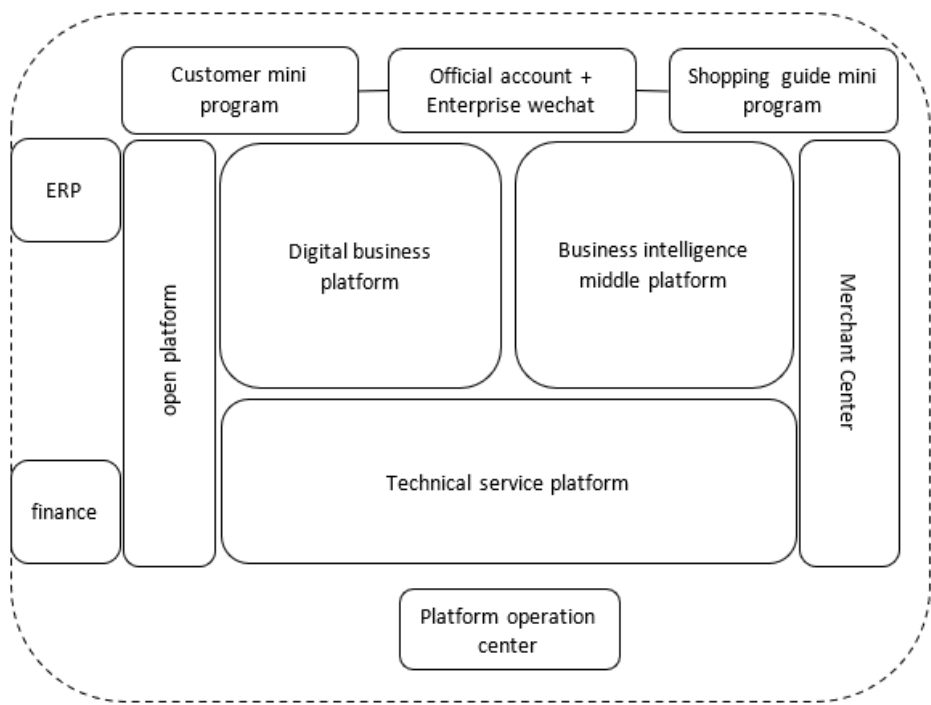


Figure 1 Dashang Group New Retail Operating System

Through digital transformation, Dashang Tiangou has not only optimised its internal management and operation process, formed a set of unique and complete new retail operating systems, enhanced its competitiveness through the "physical + digital" operation system, but also brought users a better service experience, and finally laid a solid foundation for the sustainable development of the enterprise.

3 The study's findings

3.1 Main challenges and coping strategies

Although Dashang Tiangou has achieved significant progress in digital transformation and upgrading, it also faces a series of challenges related to the application of digital technology.

Technological Innovation and Talent Shortage

With the continuous digitalisation of Dashang Group, new technical challenges constantly emerge, requiring enterprises to upgrade their technical architecture and optimise system functions to meet increasingly diverse user needs. Despite the maturity of Tiangou's digital products, the company must continuously iterate and refine its systems to keep pace with business evolution.

Dashang Tiangou has invested heavily in research and development (R&D) to address these challenges, ensuring that its technology remains cutting-edge, thus gaining a competitive market advantage. To this end, the company has recruited and trained technical experts and established strong partnerships with universities and research institutions to explore emerging digital technologies. The innovative approach of Dashang Tiangou's management has helped the company maintain a leading position in digital technology, delivering an enhanced product experience to users.

However, Dashang Tiangou also faces a talent shortage in the current competitive market. A lack of skilled professionals has led to execution gaps, where some strategies and initiatives have not been effectively implemented. At the same time, the oversupply of goods and increasing price competition have further underscored the importance of investing in human capital.

Market Risks and Brand Building

Tiangou recognises the need to maintain a competitive edge in an increasingly competitive market environment by constantly innovating its service and business models to address evolving consumer demands. However, during the integration of

online and offline operations, Dashang Tiangou has encountered challenges, including:

- Difficulties in acquiring new offline customers
- Price war pressures
- Limited customer traffic

Dashang Tiangou has adopted innovative business models to counter these challenges, expanded its market share, and explored new profit-generation strategies. The company has strategically focused on its core strengths, adjusting procurement volumes based on market demand and sales performance and optimising cost efficiency and resource allocation to drive profitability.

In the cross-border e-commerce sector, Dashang Tiangou treats international trade as a supplemental sales channel, primarily importing foreign goods for domestic sales. Through initiatives such as IDC certification, establishing a proprietary platform, and streamlined customs reporting, Dashang Tiangou has demonstrated financial strength and a loyal customer base. These measures expand sales opportunities and further solidify the company's market leadership.

Strengthening Brand Influence and Talent Development

Recognising the importance of brand influence, Dashang Tiangou has invested in comprehensive brand promotion strategies to enhance market reputation and visibility. This not only attracts skilled professionals but also opens up new business opportunities.

Additionally, leveraging its expertise in offline retail, Dashang Tiangou acknowledges the growing need to integrate physical retail with digital platforms. This realisation has driven the demand for hybrid professionals with traditional retail and digital operations expertise. To bridge this gap, Dashang Tiangou has implemented:

- Internal training programs to upskill employees

- Collaborations with universities and research institutions to cultivate next-generation talent

In terms of capital operations, although Dashang Group has not yet pursued public listing, its management is actively exploring capital operation models to integrate financial resources and drive rapid business expansion. By focusing on brand strength and talent development, Dashang Tiangou aims to overcome its talent shortage and explore new investment and growth strategies.

Enhancing Compliance and Network Security

As Tiangou expands globally, its cross-border business operations face challenges such as:

- Cultural differences
- Uncertainty in legal regulations
- Network security risks

These factors impact business stability and test the company's adaptability and risk management capabilities.

To address these issues, Dashang Tiangou has implemented proactive measures, including:

1. Strengthened Compliance Management
 - Monitoring legal and regulatory changes across different markets
 - Ensuring that all business operations comply with local laws and regulations
 - Reducing legal risks and supporting long-term stability
2. Enhanced Network Security
 - Investing in advanced cybersecurity technologies
 - Implementing strict security protocols to protect data privacy and transaction security

- Providing users with a more secure and reliable digital environment

By reinforcing compliance and network security, Dashang Tiangou enhances its risk management capabilities and lays a strong foundation for sustainable international expansion.

3.2 Market performance and successful practice analysis after the transformation

With the development of trade digitalisation, Dashang Group recognised the necessity of digital transformation and initiated its digital strategy in 2014. Key measures in this transformation process included:

- Establishing a global supply chain network
- Implementing cloud computing and big data technologies to optimise business processes
- Developing cross-border e-commerce platforms to enhance international sales
- Introducing innovative platform services to provide more flexible payment solutions

With the advent of the Internet, Dashang Group's customer base expanded, shifting from primarily middle-aged and elderly consumers to younger demographics adept at using digital platforms. Recognising the different consumption habits of younger generations, Dashang Group adopted targeted marketing strategies, a key factor in its digital transformation success.

For instance, during the mature stage of the Tiangou platform, the company enhanced transaction accuracy and user experience by integrating artificial intelligence (AI). Simultaneously, big data analytics allowed Dashang to monitor market dynamics in real-time, providing accurate insights for buyers and sellers, further facilitating trade efficiency.

The trend of trade digitalisation has encouraged Dashang Group to leverage digital platforms for user data collection and analysis through the Tiangou team. This shift has reduced transaction costs, expanded the market, and transformed the company's business model from traditional to digital trade.

Key achievements in digital transformation

With the support of the Tiangou team, Dashang Group has successfully achieved the following transformational milestones through digital technology:

1. Reduced Operating Costs

The integration of digital technology has enabled Dashang Tiangou to automate order processing, reduce delivery times, and minimise inventory surplus through intelligent warehousing solutions. This has resulted in:

- A 5.73% year-on-year decrease in total operating costs, amounting to RMB 4.512 billion (2022)
- A 4.85% year-on-year decline in selling expenses, totalling RMB 922 million
- A 50.56% year-on-year increase in asset disposal income, reaching RMB 134 million

2. Enhanced Market Competitiveness

By integrating data analytics and personalised services, Dashang Tiangou has improved its market insight and customer service quality, enabling it to meet consumer demands better and maintain a competitive edge. As a result, in 2022:

- Inventory reached RMB 4.436 billion, up 5.52% year-on-year
- Intangible assets grew to RMB 832 million, reflecting an 18.35% year-on-year increase
- Fixed assets increased to RMB 4.2 billion, marking a 3.14% year-on-year growth
- Projects under construction surged to RMB 90 million, an 80% year-on-year rise

3. Restructured Corporate Culture and Organizational Framework

Digital transformation has redefined Dashang Tiangou's corporate culture and fostered an innovation-driven organisational environment. The organisational structure has been optimised to adapt to rapid market changes, ensuring agility and efficiency. As part of this transformation, Employee compensation was reduced to RMB 57 million, reflecting a 16.18% year-on-year decrease.

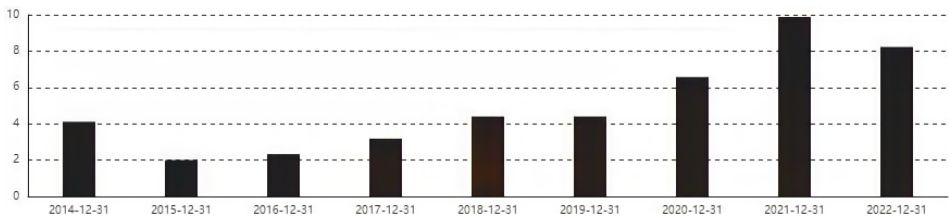


Figure 2: Dashang Group's Net Interest Rate From 2014 To 2022

Data source: Dashang Group's Annual Report.

After its digital transformation, Dashang Group has established a diversified business model, encompassing an online trading platform, multi-channel supply chain, and logistics services. The company’s core daily operations are now entirely system-driven, with the development of its business centre system enhancing operational efficiency and data utilisation.

Market Performance and Regional Economic Impact

Following years of experimentation and refinement, Tiangou’s data system has successfully integrated heterogeneous data across various online and offline business lines, ensuring stable revenue growth and continuous market expansion. Particularly in Liaoning Province, which plays a significant role in the Belt and Road Initiative, Dashang Group’s digital advancements have indirectly contributed to regional economic growth and technological development.

Additionally, the brand influence of Dashang Group has grown significantly, positioning it as a trusted trade partner for domestic and international enterprises.

Future Strategic Initiatives

Looking ahead, Dashang Group plans to develop a "Dashang Digital Circulation Platform", further enhancing digitalisation across the entire supply chain and accelerating digital transformation efforts.

Key strategic actions include:

1. External Supply Chain Enablement. For supply chain optimisation, Tiangou has launched an app-based procurement platform and developed efficient docking systems, such as "One Piece Docking", to streamline supply processes, increase efficiency, and provide a seamless partner experience.

2. Enhancing Internal Management Efficiency. By promoting AI-driven tools across management and operational teams, Dashang Group ensures that employees fully leverage technological advancements, significantly improving work efficiency and overall staff empowerment.

3. Establishing the "Dashing Digital Circulation Platform". Tiangou aims to build a comprehensive digital circulation platform, seamlessly integrating online and offline operations. This initiative will:

- Expand sales opportunities
- Reduce operational costs
- Improve efficiency
- Enhance the consumer digital service experience with greater convenience and transparency

4. Innovation and Expansion in Cross-Border Business. As a leading platform for cross-border commission sales, Tiangou has successfully facilitated numerous brands' entry into the Chinese market. One notable partnership is with Wanzhongyuncang Co., Ltd., a cross-border business partner specialising in Japanese and South Korean brands. With a stable supply chain and extensive agent network, this partnership has ensured a consistent flow of goods for Tiangou.com.

In August 2023, with the support of the Tiangou e-commerce platform, Wanzhongyuncang's sales tripled, demonstrating the platform's effectiveness in driving business growth. Furthermore, Tiangou has strengthened its collaboration with EMS to optimise warehousing and logistics.

Looking ahead, Tiangou.com aims to expand its partnerships with enterprises offering European and American brands, jointly exploring broader international markets, aligning with research hypothesis 2 of this study.

Implementing these strategic measures has not only strengthened partnerships with external stakeholders. Still, it has also enabled Dashang Group to effectively integrate into the global market, improving service quality and enhancing user experiences. These initiatives have successfully facilitated Dashang Group's digital transformation and upgrade, laying a solid foundation for long-term sustainable growth.

4 Conclusions and suggestions

4.1 Research conclusion

This paper discusses the impact of trade digitalisation on enterprise transformation and upgrading through an in-depth analysis of Dashang Group's digital transformation practice. Through the digital tools of Dashang Tiangou, Dashang Group actively promotes the transformation and development of digital construction in the direction of digital intelligence integration. Based on business scenarios and guided by consumer demand, through the profound combination of cloud computing, big data, artificial intelligence and other digital technologies with business, operation, management and other links, it realises the accelerated transmission of data flow, deep mining of value, creation and closed loop of intelligent decision-making. Iterative cycle, scientific reconstruction of a new value chain and digital ecology, with digital intelligence to empower entities to enhance their market competitiveness. The research shows that the trend of trade digitalisation is significant to improve the market competitiveness of enterprises. The case finally confirms the two hypotheses proposed in this study, concluding that trade digitalisation is the key driving force for enterprises to achieve transformation, upgrade, and participate in international competition.

Specifically, enterprises can use digital platforms to collect and analyse user data, understand user needs and behaviours, and quickly adjust product or service strategies to meet market changes through dynamic capabilities. At the same time, the digital platform can also serve as a platform for enterprises to collaborate and

innovate with external partners, attracting more developers to join in through shared data and open interfaces and jointly creating more value.

4.2 Policy suggestions

The transformation and upgrading experience of Dashang Group provides valuable insights for other enterprises embarking on their digital transformation journey. These lessons can be summarised as follows:

1. Enterprise-level strategies

Embracing Digital Transformation and Strengthening Innovation

Digital transformation indirectly enhances business performance by driving consumption upgrades (Zhu, 2023). Enterprises should prioritise digital transformation as a strategic focus, fostering a culture of digital innovation among employees. This involves leveraging advanced technologies, such as cloud computing, big data analytics, and artificial intelligence, to enhance operational efficiency and decision-making quality.

Investing in Digital Innovation and Strengthening Cybersecurity

In the digital era, enterprises must stay ahead of technological trends, continuously introducing new technologies while optimising existing business models. Strengthening data management, cybersecurity, and privacy protection improves the efficiency of enterprise-wide information management in the digital environment (Yang, 2023). Establishing strict security protocols and privacy policies helps build consumer trust and ensure regulatory compliance.

Building a Skilled Workforce and Organizational Adaptation

The demand for high-skilled human capital is critical in value chain upgrading during digital transformation (Guo & Zhu, 2024). Enterprises must invest in digital skill training programs, attract and retain top talent, and develop a corporate culture that aligns with digital innovation. Additionally, organisations should adapt their structures to support agile decision-making and new development needs.

Understanding Global Markets and Strengthening Cooperation

To effectively navigate international trade digitalisation, enterprises must develop deep insights into regional market demands and cultural characteristics. Strengthening partnerships with local brands fosters mutual growth and facilitates cross-border trade expansion.

2. Technological innovation and digital transformation

In the era of digitalisation, enterprises must stay at the forefront of technological advancements, quickly adopt new technologies, and enhance operational efficiency to maintain a competitive edge.

Businesses gain valuable insights that support precision marketing and personalised consumer engagement by analysing customer behaviour through online platforms and big data analytics.

The convergence of online and offline commerce is crucial for digital transformation. Tiangou, for example, recognises that maintaining online customer loyalty while increasing offline customer engagement requires continuous updates to digital platforms and marketing content.

3. User-centric product optimization

As consumer demographics shift toward younger audiences, enterprises must adapt to evolving consumption habits and preferences. This requires continuous product and service optimisation to enhance user experience and satisfaction.

Building consumer trust is fundamental for long-term business sustainability. Enterprises must prioritise data security and privacy to safeguard sensitive user information while complying with global regulatory standards.

4. Talent development and incentive mechanisms

In the digital era, market insight and strategic decision-making are essential for seizing opportunities and driving business growth. Ultimately, enterprise competitiveness is rooted in talent.

Enterprises should prioritise talent cultivation and recruitment, strengthen internal training programs and develop competitive incentive mechanisms to stimulate employee creativity and innovation.

5. Expanding international cooperation and digital trade

Enterprises should actively seek international collaborations, share industry knowledge, and jointly promote trade digitalisation. When entering global markets, businesses must adapt strategies to local market conditions and align with regional policy incentives to secure preferential trade benefits. Governments are critical in facilitating digital trade growth, creating favourable policies, and helping enterprises capitalise on new opportunities.

Government-backed brand promotion for regional businesses, particularly in Northeast China, can counteract market stagnation and stimulate business activity. To advance digital trade, governments should introduce:

- Policies supporting e-commerce supply chains
- Incentives for warehousing and logistics development
- Strategic investments in digital platforms

Drawing inspiration from successful case studies in southern China, policymakers can tailor digital trade policies to align with local economic conditions, positioning Northeast China as a digital trade hub. Through policy guidance and market-driven initiatives, local enterprises can emerge as leaders in digital trade, fueling regional economic growth.

The case of Dashang Tiangou highlights the positive impact of trade digitalisation on enterprise transformation and upgrading. By continuously promoting technological innovation, optimising products and services, and expanding international cooperation, enterprises can seize new opportunities, navigate market challenges, and achieve sustainable long-term growth.

4.3 Research limitations and future research directions

Although this study uses Dashang Tiangou as a case, it provides valuable insights into the digital transformation of enterprises, but it also has certain limitations. First of all, in terms of case selection, case studies may not fully represent the situation of all industries and enterprises. They can be expanded to more enterprises for comparative research in the future. Secondly, the data mainly came from public materials and interviews with Dashang Tiangou. Finally, this study uses a case study approach, and in the future, attempts can be made to introduce quantitative analysis methods for more precise quantitative analysis.

With the rapid development of trade digitalisation, in the future, we can further study the profound impact and mechanism of trade digitalisation, as well as how to deal with the possible challenges and risks. We can choose to focus on the following directions:

Cross-industry comparative research. A comparative analysis of the transformation and upgrading of different industries in trade digitalisation is conducted to gain a broader perspective.

Long-term effect evaluation. Track and study the digital transformation process of enterprises to evaluate their long-term effects and continuous impact.

Technology development and application and the role of policy environment. The in-depth study on how emerging digital technologies further promote the innovation of trade mode and the transformation of enterprise business models can also explore how government policies affect the digital transformation of enterprises and international trade activities.

In short, the digitalisation of trade has become an irreversible trend, and enterprises need to grasp the opportunities brought by the rapid development of digital technology and realise the transformation of business models from "old" to "new" through the development and application of digital technology.

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