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INTERNET-ENABLED TRADE DEVELOPMENT UNDER ECONOMIC DIGITALISATION

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The digitalization of the economy has had a significant impact on the development of e-commerce and online trade, contributing to market expansion and the transformation of traditional business. Analyzing the models and tools used in digital transformation helps to form an understanding of future trends in the development of online trade, logistics, and e-commerce, predict future changes, and develop effective strategies for business. Among the leaders in the online trade market, the supply chain and logistics management model of the Chinese company JD Logistics was chosen for analysis.

Keywords: digital economy; internet trade; e-commerce.

РАЗВИТИЕ ИНТЕРНЕТ-ТОРГОВЛИ В УСЛОВИЯХ ЦИФРОВИЗАЦИИ ЭКОНОМИКИ

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Цифровизация экономики оказала большое влияние на развитие электронной коммерции и интернет-торговли, способствовала расширению рынка и трансформации традиционного бизнеса. Анализ используемых моделей и инструментов цифровой трансформации помогает сформировать представление о будущих тенденциях развития интернет-торговли, логистики и электронной коммерции, прогнозировать будущие изменения и разрабатывать эффективные стратегии для бизнеса. Среди лидеров рынка онлайн-торговли для анализа была выбрана модель китайской компании по управлению цепочками поставок и логистике – JD Logistics.

Ключевые слова: цифровая экономика; интернет-торговля; электронная коммерция.

In the era of the digital economy, internet trade is reshaping the global business landscape at an unprecedented speed. The deep integration of digital technologies such as cloud computing, big data, and artificial intelligence has given rise to new business models like cross-border e-commerce, social e-commerce, and live-streaming e-commerce [1]. These innovations have broken the time and space limitations of traditional trade and restructured global value and supply chains. The widespread use of digital technologies has not only reduced trade costs and improved transaction efficiency but, more importantly, has created entirely new business models and value growth opportunities. In this context, internet trade has become a key engine driving global economic growth and a crucial area for

countries to seize future development advantages. The innovative application of digital technologies is redefining trade rules, changing the competitive landscape for businesses, and driving the transformation of the global economic governance system.

The report "Business e-commerce sales and the role of online platforms" presents data based on statistics from EU countries and partner countries, covering 43 developed and developing nations [2]. In 2021, the e-commerce sales volume approached 25 trillion USD, accounting for about three-quarters of global GDP (76 % of global GDP and 73 % of exports worldwide). Compared to pre-pandemic levels, this shows a 15% growth from 2019 to 2021, and in 2022, sales are estimated to have grown by another 10 %, reaching nearly 27 trillion USD. The volume of retail e-commerce sales in China in 2021 was estimated at more than 2.49 trillion USD, representing a 15 % year-on-year market growth. In consonance with Statista forecasts, retail online sales in China are expected to exceed 3.6 trillion USD this year.

According to official data from the National Bureau of Statistics of China [3], sales have grown 6.5 times from 2013 to 2023 (fig. 1). Meanwhile, e-commerce sales in wholesale and retail trade, as well as e-commerce sales in transportation, warehousing, and postal services, have shown a ninefold growth during the same period. Many businesses choose to exist solely in the digital realm and sell online, while others try to combine increasing online sales with order acceptance through more traditional methods.

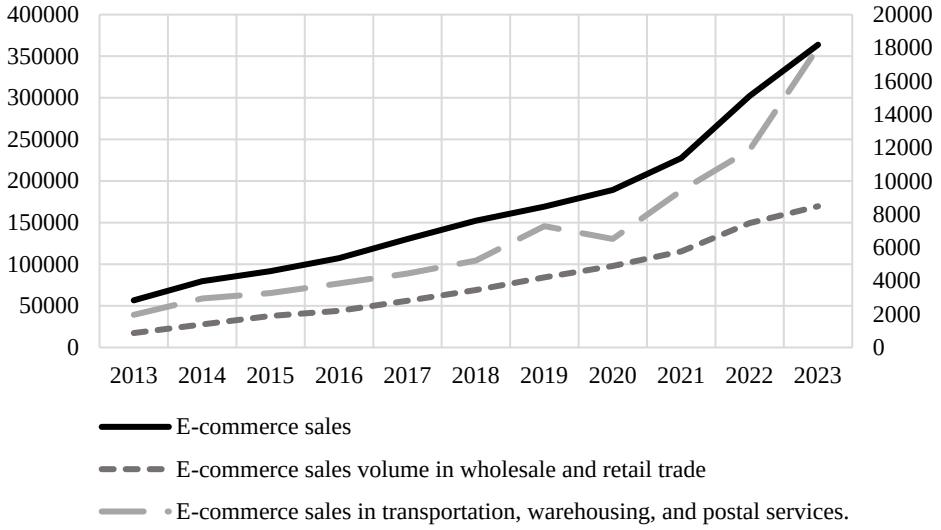

Fig. 1. E-commerce sales of China in 2013–2023, 100 mln yuan

The huge number of orders and personalized demands in internet trade have forced the logistics system to undergo digital and intelligent transformation. This has accelerated the rapid application of technologies such as smart warehousing, route optimization, and real-time tracking. At the same time, the improvement in logistics efficiency and service quality has provided a solid foundation for internet trade to expand market space and enhance user experience. This mutually beneficial relationship is particularly evident in cross-border e-commerce. The improvement of international logistics networks and customs clearance efficiency has significantly reduced the cost of cross-border trade and promoted the prosperous development of global digital trade. The application of big data technology enables logistics companies to accurately predict market demand and optimize resource allocation, while the consumer data accumulated by internet platforms provides important insights for logistics companies to innovate service models. Driven by digital technology, internet trade and the logistics industry are building a highly integrated ecosystem through data sharing, system connectivity, and process collaboration. This has formed a deeply coordinated and mutually reinforcing symbiotic relationship, jointly driving the innovative development of the digital economy [4].

The use of cutting-edge technologies like the Internet of Things, big data, and artificial intelligence is pushing the logistics industry to change from being labor-intensive to being driven by technology, opening a new chapter in smart development. Smart warehouse systems use automated equipment and robots to sort items efficiently. Blockchain technology ensures that supply chain information is true and traceable. Drones and self-driving technology are changing the way last-mile delivery works. These tech innovations not only improve logistics efficiency and reduce operating costs but also change how value is created in logistics services. The deep use of digital technology allows logistics companies to offer personalized and customized solutions, transforming from simple transport services to comprehensive supply chain service providers. Driven by digital technology, the logistics industry is rapidly moving towards being more networked, intelligent, and green, providing important support for building a modern circulation system and promoting high-quality economic development.

China, along with the UK, have significantly higher online retail sales than other economies, accounting for around 25–30 percent of all retail sales. Overall E-commerce sales growth over the pre-pandemic level has been 25 % and China's contribution to this growth is significant (fig. 2). Analysis of Chinese company JD Logistics model and business logic, its digital transformation path, provides insight into future development trends of e-commerce logistics.

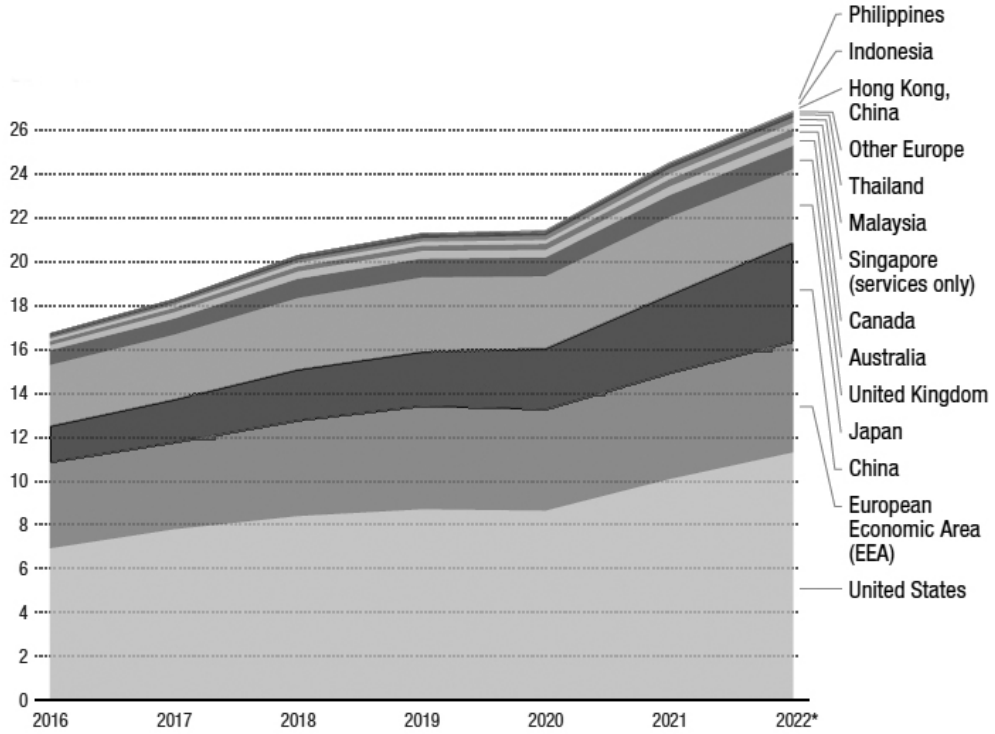

Fig. 2. E-commerce sales by businesses 2016–2022, trln ISD.
Source: [2]

JD Logistics Overview. Since JD Group launched its “self-built logistics” strategy in 2007, JD Logistics has evolved from an internal logistics department serving only the group into a comprehensive logistics enterprise open to the entire society after more than a decade of continuous investment and development. In 2017, JD Logistics Group officially became an independent entity and was listed on the Hong Kong Stock Exchange in May 2021. Its business covers warehousing networks, integrated transportation, delivery networks, large-item logistics, cold chain logistics, and cross-border logistics, aiming to provide customers with integrated supply chain solutions. In 2023, JD Logistics achieved annual revenue of 166.6 billion yuan, with a net profit of 1.167 billion yuan.

Its continuous innovation in logistics technology has provided strong momentum for high-quality development.

JD Logistics' Digital Transformation Journey. The digital transformation of JD Logistics can be divided into three stages:

Initial Stage (2007–2016): As JD.com's internal logistics department, JD Logistics built the "Asia No. 1" smart e-commerce logistics center in Shanghai in 2014, which was then China's leading facility. In 2016, the company launched a smart warehousing and logistics system and established the X Division, focusing on drone delivery, unmanned warehousing, and intelligent robotics.

Expansion Stage (2017–2020): In 2017, JD Logistics Group was officially established and began offering services to external customers. In 2018, the company built the Global Smart Supply Chain Network (GSSC). In 2019, JD Logistics completed Asia's largest 5G smart logistics demonstration park, further advancing intelligent logistics.

Intelligent Stage (2021–Present): After its successful IPO, JD Logistics adopted "technology-driven" as its core strategy, launching upgraded digital products such as the third-generation Tianlang system and the fifth-generation smart delivery. In 2023, the company introduced "JD Logistics Brain" and "Jinghui 3.0", powered by big data models, to optimize supply chains. By 2024, JD Logistics expanded its L4 autonomous delivery vehicles to 200 cities in China, while its drone delivery network achieved regular operations in remote areas, significantly improving logistics efficiency and convenience.

The issue should be considered what allowed JD Logistics not only consolidates its advantages in the field of traditional e-commerce logistics, but also accumulates experience and reputation in the logistics and distribution of duty-free goods.

1. JD Logistics' Integrated Supply Chain Management Model

Using advanced digital technology, JD Logistics covers all aspects including warehousing, transportation, and delivery, creating a complete service chain. Its digital operation system mainly consists of three core parts. First, an intelligent decision-making platform that focuses on analyzing operational anomalies, offering optimization suggestions, and quickly adjusting resource allocation for rational decision-making. Second, digital operation management, which relies on self-developed systems for inventory management (WMS), transportation management (TMS), and order management (OMS), providing end-to-end supply chain transparency for customers. Lastly, the intelligent operation level, which is key to achieving unmanned logistics, involves the use of technologies like smart robots and automated guided vehicles (AGV), making processes such as storage, sorting, and handling more automated and intelligent. By continuously upgrading its proprietary digital operation service system, JD Logistics can expand its supply chain product portfolio and offer standardized supply chain solutions in various industries such as electronics, auto parts, fast-moving consumer goods, and pharmaceuticals, helping customers effectively reduce costs and improve efficiency. It is reported that in 2023, JD Logistics' revenue from integrated supply chain services reached 81.47 billion yuan, a 94.7 % increase over the past five years, and is expected to continue to rise in the future.

2. JD Logistics: Differentiated Integrated Logistics Services

JD Logistics has built a unique competitive advantage with its self-operated warehouse network and delivery system. Unlike traditional courier companies that focus on delivery speed, JD Logistics follows a "storage over transportation" approach. By placing warehouses closer to customers, they reduce transportation distances and ensure efficient fulfillment. As of 2023, JD Logistics' warehouse network covers nearly all counties in China, including 1,600 self-operated warehouses and over 2,000 cloud warehouses. With strong data analysis capabilities, JD Logistics pre-positions goods in the nearest warehouses and optimizes inventory strategies, leading the industry in operational efficiency.

After acquiring Kuayue Express and Deppon Logistics, JD Logistics expanded its resources, operating over 19,000 delivery stations by 2023, ensuring timely deliveries. Targeting mid-to-high-end customers, JD Logistics uses a "premium service + brand effect" model to maintain stable pricing

and business growth. In 2023, its revenue from express delivery and freight services reached 85.2 billion yuan, a 42 % increase, ranking among the top in China [5].

3. Innovative Logistics Technology Applications

Since JD Logistics initiated its technology transformation strategy in 2017, the company has continuously explored the boundaries of technological innovation. By leveraging digital, intelligent, and integrated hardware-software logistics technology products and solutions, JD Logistics has promoted high-quality development in the logistics industry. As of 2023, JD Logistics' total investment in research and development has risen to 3.57 billion RMB, a 14.4 % increase compared to the previous year. Currently, JD Logistics' technology team consists of nearly 4,600 professional R&D personnel, with cumulative investments in technology R&D exceeding 90 billion RMB. Notably, in 2023, R&D expenditures accounted for 2.14 % of the company's revenue, significantly higher than that of its industry competitors.

Products supported by advanced logistics technology are now widely applied in core supply chain processes and key nodes, including warehouse management, goods sorting, transportation scheduling, and last-mile delivery. In terms of cost structure, JD Logistics' main operating costs are concentrated in labor expenses and external service procurement. Employee salaries and related benefits, covering compensation for warehouse, sorting, transportation, and delivery personnel, have decreased from 42 % to 36 % of total costs between 2019 and 2023. With the expansion of business scale and the increase in operational staff, the application of high-tech logistics equipment, such as intelligent robots, has significantly improved human resource efficiency [6].

In terms of outsourcing, expenses for express delivery services, freight transportation, and other auxiliary services constitute another major cost. Through the optimized allocation of intelligent transportation resources, JD Logistics has successfully reduced the proportion of additional costs incurred by pursuing fast delivery, thereby further enhancing overall operational efficiency.

The rapid growth of the digital economy and internet trade has brought new energy to the global economy, improved efficiency, and created new opportunities. However, we must also face its negative effects. Increased market monopoly squeezes the survival space of small and medium-sized businesses and reduces competition. Algorithm-driven recommendations create "information bubbles", worsening social division and cognitive biases. Over-reliance on digital platforms promotes instant gratification and shallow thinking, weakening deep thinking skills. While enjoying the benefits of the digital economy, we must take effective measures to address these challenges for healthier and more sustainable development.

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