



The Relationship between E-commerce and Logistics Industry Development: A Case Study of SF Express

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Abstract With the widespread adoption of the internet, e-commerce has flourished. Logistics companies, as the key link between e-commerce and consumers, influence the quality and efficiency of e-commerce services. Their synergy has become crucial for economic growth. This study employs case analysis to explore the interrelationship between the logistics industry and e-commerce, taking SF Express as an example. The research reveals that logistics play a pivotal role in the development of e-commerce, and the enhancement of logistics efficiency can secure e-commerce growth. Conversely, e-commerce development also drives innovation in logistics technology and service models, improving efficiency and reducing costs. Based on these findings, it is recommended that enterprises optimize collaborative strategies and strengthen digital transformation. For the industry, it is suggested to develop according to the advantages of e-commerce or logistics, and for the government, policies should promote synergy between the two, enhancing the effectiveness of industry policies and driving overall industry progress.

Keywords: E-commerce, Logistics, Collaborative Development

1 Introduction

In the digital age, the widespread adoption of the internet has led to an explosive growth in e-commerce, which has comprehensively changed consumer habits and market dynamics. The logistics industry, as the core support for the smooth operation

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of e-commerce, plays a crucial role in determining whether e-commerce can provide consumers with a high-quality experience through its efficient and reliable services. The collaborative progress of the logistics industry and e-commerce has become the core driving force for the continuous prosperity of the economy. Therefore, how the logistics industry and e-commerce can promote each other and develop in coordination is a key issue faced by related enterprises and practitioners.

This study selects SF Express as a case for in-depth analysis. SF Express, through years of relentless efforts, has built a powerful integrated logistics network in the logistics field, closely integrating the "air network + ground network + information network". Its business scope is extensive and distinctive, covering traditional segments such as time-sensitive express and economic express, as well as emerging areas like express freight and cold chain logistics. At the same time, in the e-commerce sector, SF's focus on fresh e-commerce has achieved significant results. A comprehensive study of SF can accurately grasp the key aspects of logistics and e-commerce operations, collaborative details, and digital transformation practices, extracting valuable experiences and insights with universality and forward-looking significance for industry development.

Through case analysis of SF Express, this paper finds that the logistics industry can ensure the development of e-commerce, and the development of e-commerce also provides opportunities and promotes the efficiency improvement of the logistics industry. The specific mechanisms of mutual promotion are as follows. First, the role of logistics in ensuring e-commerce is significant. Logistics is a key link in the realization of e-commerce. SF's logistics business provides a solid guarantee for its e-commerce business, ensuring the timely and accurate delivery of e-commerce goods, enhancing the consumer shopping experience, and promoting the development of e-commerce business. Second, e-commerce drives the development and innovation of logistics. The development of e-commerce has prompted logistics companies to continuously innovate in terms of technology application and service models. The demand for logistics brought by e-commerce has played a scale effect on the logistics industry, leading to increased efficiency and reduced costs in the logistics industry.

The theoretical significance of this paper includes: enriching the theory of collaborative development between e-commerce and logistics, providing new cases and research perspectives for disciplines such as business management and marketing. It contributes to a deeper understanding of inter-enterprise cooperation relationships and resource integration principles, promoting the development of related theories.

The practical significance of this paper includes: providing strategic decision-making basis for e-commerce and logistics enterprises, helping them to meet competitive challenges and achieve sustainable development. For instance, companies can optimize their operational models and improve service quality based on the research. At the same time, it promotes industry development, enhances resource utilization efficiency, and fosters economic growth.

The rest of this paper is organized as follows. Section II summarizes the relevant literature. Section III discusses the problem based on the case study of SF, and Section IV concludes.

2 Literature Review

2.1 Concepts of E-commerce and Logistics

E-commerce refers to the entire process of business activities conducted using digital information technology on the internet and other electronic network platforms. In this process, activities such as browsing and selecting products and services, purchasing, payment, transaction negotiation, customer service, marketing promotion, and supply chain management are all completed through electronic communication technology and online platforms. E-commerce encompasses various types of transaction models, including business-to-business, business-to-consumer, consumer-to-consumer, and integrated online and offline business models. It breaks through traditional geographical, temporal, and physical space limitations, allowing users worldwide to conduct transactions at any time and from any location, thereby greatly improving business efficiency, reducing transaction costs, and providing businesses and consumers with unprecedented convenience and multiple choices. Furthermore, e-commerce also involves a series of supportive technologies and legal frameworks, such as electronic data interchange (EDI), electronic signatures, online payment systems, network security technology, logistics management, and online marketing strategies, to ensure the security, reliability, and legality of e-commerce activities. With the development of emerging technologies like mobile internet, big data, and artificial intelligence, the forms and connotations of e-commerce are continuously enriching and expanding.

Logistics economics is a broad concept that reflects both the operational efficiency, economic benefits, and social value of the logistics industry itself and the pivotal role

of logistics activities in the macroeconomy. Logistics is not only the physical flow process of tangible products from the production site to the consumption site but also a collection of various resource allocation, service innovation, cost control, and value creation activities involved in this process. In addition, logistics economics also includes the planning, design, and management of logistics systems, such as optimizing supply chain management, improving logistics technology, adopting advanced logistics facilities and equipment, and establishing efficient logistics networks to reduce logistics costs and improve logistics efficiency, thereby creating more profit space for enterprises and enhancing their competitiveness [1].

2.2 Logistics Industry Supports the Development of E-commerce

The logistics industry is a major component of e-commerce and is the guarantee for the realization of e-commerce[8]. Yan points out the need to utilize e-commerce to achieve modern logistics[9]. He conducts an in-depth analysis of the relationship between e-commerce and commercial logistics, believing that modern logistics are deeply involved in the operation of e-commerce, ensuring the transition from concept to reality[10]. At the same time, the development of e-commerce has greatly increased the speed of information and resource exchange, becoming a force for the rapid development of the modern logistics industry and the cornerstone of profit growth for logistics enterprises. With the development of cross-border e-commerce, the integrated development of cross-border e-commerce and logistics has gradually become a focus of research. Zhou proposes the need to accelerate the collaborative development of cross-border e-commerce and cross-border logistics, requiring the construction of a comprehensive support service system, the improvement of the mutual trust mechanism in e-commerce benefits, and the enhancement of the standardization and intelligence of cross-border logistics[11]. Ou and Lai base on the existing problems in the integrated development of China's cross-border e-commerce and logistics, providing suggestions for their integrated development[12-13].

E-commerce is highly dependent on the development of the logistics industry. The stronger the competitiveness of the logistics industry, the more it can efficiently and cost-effectively complete the circulation of goods through e-commerce channels, thereby promoting the development of e-commerce. The impact of the competitiveness of the logistics industry on the development of e-commerce is reflected in the following three aspects. First, logistics companies are responsible for

transporting goods from sellers to buyers through services such as transportation, warehousing, packaging, loading and unloading, and distribution, completing the actual delivery process of e-commerce transactions. Second, logistics companies use advanced technological methods to plan transportation routes and provide reasonable transportation conditions to reduce losses in the transportation process, with the aim of reducing transportation costs and improving transportation efficiency, ultimately reducing the operating costs of e-commerce enterprises and promoting the development of e-commerce. Third, in the face of fierce competition in e-commerce logistics services, logistics companies need to continuously improve logistics technology and update logistics transportation equipment to gain a competitive advantage and provide better services for the development of e-commerce. The competitiveness of the logistics industry can promote the development of e-commerce, and the development of e-commerce can stimulate new business forms and models, promoting the growth of the circulation economy [7].

2.3 E-commerce Promotes the Efficiency of Logistics

The rise of e-commerce has increased the pressure on logistics and distribution, and the warehousing system is continuously being upgraded. Traditional manual management models are increasingly showing significant lag, and relying on modern information technology to build an automated management system has become an important means of development for logistics and distribution. Automation technology can fully cover various aspects related to logistics and distribution, including warehouse management, personnel management, loading and distribution management, transportation monitoring, and after-sales service, enhancing the level of refined management and providing a more intelligent model for the conduct of logistics and distribution work[2]. With the prosperous development of e-commerce, the corresponding institutional systems and the application of supporting technologies help to enhance the refinement of logistics enterprises' business development, effectively solve various contradictory problems arising during business operations, and can contribute to the sustainable development of enterprises [4]. For example, information integration technology can be used as a basis for planning transportation routes and cargo distribution and the construction of logistics warehousing and supply chain cooperation systems can ensure the improvement of overall logistics turnover efficiency [3].

At the same time, consumers' demands for the flexibility of logistics services are continuously increasing. Consumers hope to choose suitable delivery methods and times according to their own schedules and locations, enjoying more flexible logistics services. Therefore, companies need to provide a variety of delivery options, such as timed delivery, evening delivery, and pick-up points, to meet consumers' personalized needs. By offering flexible and diverse delivery choices, companies can enhance consumers' shopping experiences, and improve customer satisfaction and loyalty [6]. In addition, consumers' demands for supply chain transparency and traceability are also increasing. Consumers wish to clearly understand the origin, production process, and transportation status of products to ensure product quality and safety. Therefore, companies need to improve the transparency of the supply chain, strengthen communication and cooperation with suppliers and logistics companies, and establish a traceable supply chain system. By providing transparent and traceable supply chain information, companies can enhance consumers' trust in products, and improve brand image and competitiveness [5].

3 Case Study of SF Express

SF Express is a comprehensive logistics service provider in China, headquartered in Shenzhen. After years of development, it has initially established the capability to provide customers with integrated logistics solutions. It not only offers logistics services at the distribution end but also extends to the front-end of the value chain, including production, supply, sales, and distribution. Starting from consumer needs and driven by data, SF Express utilizes big data analysis and cloud computing technology to provide customers with a suite of solutions, including warehouse management, sales forecasting, big data analysis, and financial management. SF Express is also an intelligent logistics operator with a network scale advantage. Through years of dedicated operation and forward-looking strategic layout, SF Express has formed a comprehensive logistics service network that combines "air network + ground network + information network," covering both domestic and international areas. Its direct network is characterized by strong network control and high stability among domestic peers, and it is also a unique and scarce comprehensive logistics network system. SF Express adopts a direct operation model, with the headquarters implementing unified operation and management of various branches, ensuring the overall quality of network operations.

3.1 SF Express's Logistics Business

SF Express's logistics business segments are primarily divided into two major categories: traditional logistics business segments and new logistics business segments.

The traditional logistics business segments mainly include time-sensitive express and economic express. Time-sensitive express is one of the core businesses of SF Express, focusing on the high-end market segment. It relies on rapid transportation methods such as air and high-speed rail to provide efficient and punctual express services. For instance, SF Express offers services like "Same-Day Delivery" and "Next Morning Delivery," which meet customers' high demands for express services while ensuring timeliness. Economic express, on the other hand, focuses more on cost-effectiveness, primarily relying on road transportation to provide customers with economical express services.

The new logistics business segments encompass express freight, cold chain logistics, same-city delivery, international services, and supply chain management. Express freight services are mainly aimed at bulk goods or items with greater weight, providing fast and secure logistics services. Cold chain logistics focus on products that require temperature-controlled transportation, such as fresh produce, food, and pharmaceuticals, ensuring the quality and safety of the products. Same-city services are dedicated to providing immediate delivery within the city, meeting consumers' high demands for speed and convenience. International services offer cross-border logistics services, including international express and freight forwarding, helping enterprises expand into overseas markets. Supply chain services provide comprehensive supply chain solutions for businesses, optimizing logistics processes and reducing costs.

3.2 SF Express E-commerce Business Segment

SF Best, established in May 2012, is an e-commerce platform primarily focused on high-grade fresh products. The platform operates under the principle of "selecting quality goods and delivering services to your home," leveraging the online SF Best mall and the robust logistics system of SF Express to serve consumers.

The advantages of SF Express in operating e-commerce business are as follows. Firstly, SF Best's market positioning in fresh produce has high barriers to entry. Compared to general e-commerce, fresh e-commerce has extremely high

requirements for delivery timeliness and product quality, thus presenting significant entry barriers. Secondly, SF's cold chain coverage is continuously expanding, with a strong delivery capability. Moreover, SF reduces the series of links including distributors, wholesalers, and retailers through direct sourcing of fresh products, greatly shortening the product supply time and maximizing the delivery capabilities that SF Express has accumulated over the years. Thirdly, SF possesses a vast accumulation of data. SF Express has long targeted high-end customers, accumulating a wealth of user information and customer resources, which to some extent enhances the precision of product promotion and reduces promotion costs. Fourthly, after years of accumulation, SF Best has developed a complete system in terms of product quality preservation, delivery timeliness, and pricing. Fifthly, SF Best's sourcing mainly adopts the method of direct procurement from the place of origin. SF Best can directly purchase products through SF's extensive network across the country, "buying from the whole country, selling to the whole country," ensuring personal control over product quality and minimizing intermediary costs to the greatest extent.

3.3 The Connection Between SF Express's Logistics and E-Commerce Businesses

SF Express's e-commerce business primarily focuses on the immediate delivery of fresh products, which leverages SF's strong supply chain advantages in the logistics field. In the procurement, transportation, and sales of fresh products, SF's logistics system ensures the freshness of the products and the immediacy of delivery to the greatest extent, providing consumers with a positive shopping experience. In this sense, the development of SF's logistics business ensures the smooth operation of its e-commerce business.

The e-commerce business also serves as an important aspect of SF's self-operated business, directly providing demand for SF's logistics services. The increase in demand for logistics services is beneficial for leveraging the scale effect of the logistics industry, which in turn leads to the development of a more robust logistics distribution network and more efficient logistics infrastructure, thereby promoting the development of the logistics business.

3.4 Digital Transformation

SF Holding is rapidly promoting digital transformation in internal processes, creating SF's intelligent brain, and establishing a leading supply chain that is digitalized, visualized, and intelligent. SF Holding is committed to building a smart supply chain system in the digital era, becoming a leader in smart supply chains. SF Holding provides full-chain technical services around the customer's raw material supply, production, warehousing, transportation, sales, and operations. ① In the raw material procurement and factory entry, intelligent management of raw material supply is realized, and intelligent scheduling and loading optimization are achieved through recycling pickup plans, etc. ② In the production, combining computer vision-based personnel management and smart park solutions ensures efficient production and personnel safety in the park. ③ In the warehousing, various solutions are provided at the design and implementation level, such as warehouse network planning, multi-level replenishment, and integrated online and offline inventory, and various services are provided at the warehouse execution level, such as bin optimization and warehouse automation. ④ In the sales, big data and algorithm technologies help customers achieve consumer insights and precise marketing, and provide online omni-channel store management and management tools for small and medium businesses. ⑤ In the operations, end-to-end supply chain infrastructure systems are implemented (OMS/TMS/WMS/BMS), connecting all business links such as orders, warehousing, transportation, and settlement, to help digital operations.

Digital transformation can reduce costs and improve efficiency across the entire chain of SF Holding's time-sensitive products. To continue maintaining SF Holding's competitive position in the industry, it is necessary to continue to reduce costs and increase efficiency. Intelligent logistics through digital transformation can accurately allocate orders to couriers at the starting end, saving time and distribution costs, and allocating couriers suitable for customer needs. Then, through the direct operation of collection points, the intelligent "collection point packaging + branch line transportation" model saves costs such as employee salaries, office rent, materials, and depreciation and amortization. The investment in full-cargo aircraft and scattered flight resources ensures timeliness, and transportation costs are the main cost of "transshipment operations + main line transportation". Finally, branch line transportation + collection point sorting is carried out, and the terminal couriers complete the delivery, completing the entire business transportation process.

Digital transformation paves the way for future business growth. SF Technology's independently developed smart supply chain innovation achievement - the "Fengzhi Cloud" product system, which includes three parts: Fengzhi Cloud • Tower, Fengzhi Cloud • Strategy, and Fengzhi Cloud • Chain, can cover the entire closed-loop system from strategic planning, planning, execution to control of the supply chain, helping enterprises build an end-to-end, sustainable smart supply chain, to achieve cost reduction and efficiency increase, so as to gain an advantage in the era of business model fission, and build a more competitive future. In the application process, Fengzhi Cloud • Tower acts as a "control tower" providing pre-warning, monitoring during the event, and post-analysis functions. After root cause analysis, the results are passed to the Fengzhi Cloud • Strategy part for further decision simulation work. Fengzhi Cloud • Strategy will conduct live drills in the simulation link and issue the drill results to the execution. According to the execution results, it determines whether the project is closed-loop or a new round of root cause analysis is started. Fengzhi Cloud • Chain builds an integrated digital logistics supply chain base for customers, providing end-to-end solutions, breaking through the collaborative systems of production, supply, and sales, managing delivery risks, achieving warehouse and distribution business closed-loop, and data penetration, ultimately playing a key role in the business growth of enterprises.

4 Conclusion

This paper discusses the relationship between the development of the logistics industry and the e-commerce industry. Theoretically, the logistics industry can ensure the development of e-commerce, and the development of e-commerce also provides opportunities and promotes the efficiency improvement of the logistics industry. Through a case study of SF Express, this paper further discusses the relationship between the logistics industry and e-commerce development, as well as its role in actual corporate operations. The paper first discusses the operational models and business characteristics of SF's logistics and e-commerce business segments, and then further discusses the relationship between SF's two major business segments — logistics and e-commerce — as well as their digital transformation initiatives. Through the research, this paper finds that, first, the role of logistics in ensuring e-commerce is significant. Logistics is a key link in the realization of e-commerce. For example, SF's logistics business provides a solid guarantee for its e-commerce business, ensuring the

timely and accurate delivery of e-commerce goods, enhancing the consumer shopping experience, and promoting the development of e-commerce business. Second, e-commerce drives the development and innovation of logistics. The development of e-commerce has prompted logistics companies to continuously innovate in terms of technology application and service models. The demand for the logistics industry brought by e-commerce has leveraged the scale effect of the logistics industry, leading to improved efficiency and reduced costs in the logistics industry.

The logistics industry and e-commerce have shown a close and complementary relationship both in theory and practice, so in the process of corporate development, the synergistic effect of the two major business segments can be leveraged to stand out in business competition. For instance, JD.com's advantage over other e-commerce platforms lies in its strong logistics and delivery capabilities. In terms of industry development, the logistics industry is the infrastructure of e-commerce, and e-commerce provides demand for the logistics industry. Therefore, the development of the logistics industry and e-commerce should be well-coordinated. In regions where e-commerce is well-developed, it is necessary to strengthen the construction of logistics infrastructure. In areas where the logistics industry is advanced, the development of e-commerce can be considered. These two industries complement each other, and local governments should consider the coordinated development of these two industries when formulating industrial policies, to better play their mutual promotional roles and thereby enhance the effectiveness of industrial policies.

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