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Implementation of Integrated Services of Intelligent Supply Chains by Leading Chinese Logistics Companies

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ABSTRACT

The article examines the restructuring of global supply chains within the framework of the active development of China's logistics services market. It is established that with the continuous improvement of the country's digital economy, these services can become one of the important directions for the development of large Chinese companies operating in this industry. The **purpose** of the work is to study the implementation of integrated intelligent supply chain services, analyze the practice of their application, and their impact on the growth of turnover and income of leading logistics enterprises in the country – Xiamen C&D Group Corp. Ltd., SF Express Holding, YTO Express – in 2021–2023. The paper describes the step-by-step mechanism of the intelligent supply chains of Chinese companies and its innovative component. It is determined that the studied organizations adhere to the principle of digital excellence, promote digital industrialization, jointly create a common logistics big data platform (the country's digital logistics ecosystem), and apply new business formats and a modern logistics model to facilitate the industrial transformation and modernization of China's economy. To achieve the goals of the study and analyze the restructuring of global supply chains within the framework of the active development of China's logistics services market, methods of scientific analysis of scientific literature and economic analysis of reports of leading logistics companies in China, comparative analysis, content analysis, and case studies were used to study examples of the implementation of intelligent supply chains in Xiamen C&D Group Corp. Ltd., SF Express Holding, YTO Express.

The results of the research can be useful for international organizations and partners of China engaged in joint logistics projects and initiatives to enhance cooperation and coordination efforts.

Keywords: global supply chains; logistics market; intelligent supply chains; Chinese logistics companies; cross-border e-commerce; digitalization

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INTRODUCTION

The restructuring of global supply chains, the dynamic economic growth of the Asia-Pacific region, and the vast and rapidly expanding potential of the logistics market have catalyzed the modernization of integrated services with intelligent supply chains among leading Chinese logistics companies.

The Asian region accounts for 45.4% of global logistics industry expenditures, with total spending exceeding \$ 10 trillion.¹ The strengthening of China's strategic role in global supply chains, the support of trade agreements by institutions such as the Regional Comprehensive Economic Partnership (RCEP) [1], and the rapid expansion of cross-border and domestic e-commerce² contribute to the increasing trade volume between Asian countries (including China) and the rest of the world. This has led to a growing demand for logistics services in the region, opening new opportunities for industry players operating in China and other Asian countries.

The development of cross-border e-commerce and the expansion of national brands into international markets have fueled the growth of China's logistics network. As demand for Chinese exports rises, logistics operations become a crucial pillar supporting the creation of an "external circulation" economy. According to data published by China's General Administration of Customs, the volume of international e-commerce trade in China reached 2.4 trillion yuan in 2023, marking a 15.6% increase compared to 2022. Where as exports accounted for 1.8 trillion yuan, reflecting a 19.6%³ year-on-year increase.

In the long term, the strengthening of manufacturing supply chains, the enhanced competitiveness of domestic brands, and the expansion of

overseas e-commerce platforms and independent websites will provide Chinese logistics companies with greater opportunities to enter global markets [2, 3].

In recent years, enterprises in this industry have been actively developing new international freight routes, integrating multimodal transportation resources (maritime, air, and rail), accelerating the construction of export channels, and continuously improving overseas hubs, ground networks, and warehouses. These efforts contribute to the further strengthening and expansion of China's international logistics network [4, 5].

For data analysis, the author of this article employed a multi-purpose research method. Through the study of three well-known Chinese logistics companies — Xiamen C&D Group Corp. Ltd., SF Express Holding, and YTO Express — and their use of integrated services for intelligent supply chains, the effectiveness and positive impact of these services on trade turnover and revenue growth of the examined companies during 2021–2023 were substantiated.

CURRENT STATE OF CHINA'S LOGISTICS INDUSTRY

China's logistics industry is characterized by high competition and significant market fragmentation. Apart from express delivery, market concentration in other segments — such as freight transportation, integrated logistics, and cross-border logistics — remains low. At the same time, while the overall logistics market in China is fragmented, it is showing a trend toward increased consolidation. According to the China Federation of Logistics and Purchasing, the top 50 logistics companies in China accounted for 18% of the industry's total revenue in 2023, which is 3 percentage points higher than in 2022.⁴

International express logistics giants are expanding their networks and businesses through

¹ Overview of China's logistics development. URL: https://www.gov.cn/test/2005-07/06/content_12477.htm

² China E-Commerce Market Research Report 2023 URL: https://pdf.dfcfw.com/pdf/H3_AP202401261618317500_1.pdf

³ China E-Commerce Market Research Report 2023 URL: https://pdf.dfcfw.com/pdf/H3_AP202401261618317500_1.pdf

⁴ Overview of China's Logistics Development URL: https://www.gov.cn/test/2005-07/06/content_12477.htm

ongoing mergers and acquisitions. The Chinese market holds potential for the emergence of world-class logistics companies, as the country's leading enterprises possess the necessary capabilities for consolidation and advancement.⁵

With the rise of new social media platforms, e-commerce, and local services, the rapid growth of emerging economic sectors and consumer scenarios is driving demand for flexible and efficient supply chains. The trend of “expressification” in logistics is becoming increasingly evident. At the consumer level, express delivery services are deeply integrated into daily life, providing instant responses and becoming essential for enhancing customer satisfaction and loyalty on e-commerce platforms and among sellers [6, p. 12]. There is a noticeable shift toward “small-batch, high-frequency deliveries” with direct-to-consumer shipping, which increases the demand for high-level order fulfillment from start to finish [7, p. 99].

As supply chain design systems evolve and improve, companies are striving for efficient coverage of target users — primarily digital consumers — and precise delivery services. This necessitates the active development of integrated logistics service capabilities tailored to an “omnichannel + unified warehouse + digitalization” model [8, p. 231].

Based on China's state policy objectives for modernizing the logistics industry,⁶ we will examine the practical implementation of integrated services for intelligent supply chains by the country's leading logistics companies.

Xiamen C&D Group Corp. Ltd.⁷

Xiamen C&D Group Corp. Ltd. operates primarily in supply chain management and real estate.

Additionally, in 2023, the company acquired a controlling stake in Meikailong, a leading operator of home goods and furniture shopping centers, as well as a business platform for the home goods industry.

The company's 2023 annual report indicates that despite a challenging market environment, Xiamen C&D Group Corp. Ltd. maintained relatively stable operational performance. Its annual revenue reached approximately 763.68 billion yuan, reflecting a 7.9% increase compared to 2021. The net profit attributable to shareholders of the listed company amounted to approximately 13.104 billion yuan, marking a 108.83% growth (*Table 1*).

The operating and net profits attributable to the parent company and generated by the supply chain operations segment in 2023 amounted to 593.366 billion yuan and 3.953 billion yuan, respectively. The net profit attributable to the parent company decreased by only 1.38% year-on-year.

As of the end of 2023, Xiamen C&D Group Corp. Ltd. had total assets of 820.85 billion yuan, net assets of 224.64 billion yuan, and net assets attributable to the parent company's owners of 695.11 billion yuan. In 2023, the company ranked 11th in the Fortune China 500 list of the 500 largest publicly traded companies in China, rising four positions from the previous year.⁸

The significant growth in the indicator “net profit of the parent company” was primarily driven by restructuring income, resulting from the acquisition of a controlling stake in Meikailong in August 2023 and its inclusion in the consolidated financial statements. If restructuring income and Meikailong's operating results from September to December 2023 are excluded, the net profit of the parent company would have decreased by 21.30 billion yuan (or 33.95%).⁹

For many years, Xiamen C&D Group Corp. Ltd. has maintained a leading position in supply

⁵ Competition in the Chinese logistics market in 2023 URL: https://pdf.dfcfw.com/pdf/H3_AP202306081590590658_1.pdf?1686253768000.pdf

⁶ Logistics Policy Release. 2023 URL: <http://www.cflp.org.cn/upload/resources/file/2023/08/14/135301.pdf>

⁷ Xiamen C&D Co., Ltd. Annual report for 2023 URL: <https://stockn.xueqiu.com/SH600153/20240415598685.pdf>

⁸ Xiamen C&D Co., Ltd. Annual report for 2023 URL: <https://stockn.xueqiu.com/SH600153/20240415598685.pdf>

⁹ Xiamen C&D Co., Ltd. Annual report for 2023 URL: <https://stockn.xueqiu.com/SH600153/20240415598685.pdf>

Table 1

Xiamen C&D Group Corp., Ltd. 2021–2023 Economic Performance Indicators

Indicator	2021	2022	2023	Difference between 2023 and 2021 indicators	Growth rate of the indicator in 2023 compared to 2021, %
Total Assets, billion yuan	602.62	664.94	820.85	218.23	136.2
Revenue, billion yuan	707.87	832.83	763.68	55.81	107.8
Net Cash Flow from Operating Activities, billion yuan	41.14	15.48	29.40	–11.74	71.5
Net Profit, billion yuan	1.84	2.58	10.70	8.86	581.5
Weighted Average Return on Net Assets (%)	15.19	12.62	24.85	9.66	–
Weighted Average Return on Equity (%)	12.63	12.62	24.85	12.22	–

Source: compiled by the author based on the annual report Xiamen C&D Co., Ltd. URL: <https://stockn.xueqiu.com/SH600153/20240415598685.pdf>

chain operations for raw materials. The company is distinguished by its strong corporate culture, experienced personnel, and ability to integrate goods, markets, logistics, finance, and information resources across various industries. It specializes in customized supply chain solutions and products, providing stable and efficient services.

Aiming to become a leading global supply chain operator, Xiamen C&D Group Corp. Ltd. has actively expanded its global procurement and sales network, now covering over 170 countries and regions. Between 2013 and 2023, it has signed contracts with more than 120,000 suppliers and clients, including around 20,000 international partners.

The company has built a strong reputation in industries such as pulp and paper, textiles, alcoholic beverages, agriculture, mineral fertilizers, and automotive. Its efficiency and service quality continue to improve, fostering a positive cycle of growth and increased profitability.

From 2021 to 2023, Xiamen C&D Group Corp. Ltd. was included for three consecutive years in the “Top 100 Chinese Companies by Brand Value” list. In 2023, it ranked 7th among the “Top 100

Chinese Companies by Brand Value Growth”. The company has also been repeatedly recognized as a “National Enterprise Honoring Contracts and Trustworthy Business”, a “Leading Enterprise in Foreign Trade and Economic Quality & Efficiency”, and has been listed among the “Top 500 Chinese Foreign Trade Companies”. Additionally, it was included in the “First Group of National Demonstration Enterprises for Supply Chain Innovation and Application” by the Ministry of Commerce and classified as a “5A-Level Enterprise for Supply Chain Services” according to national logistics industry standards.¹⁰

As a leading Chinese supply chain management service provider with a global presence, the company has developed a comprehensive “LITF” system. This system integrates resource management, logistics planning, inventory control, risk management, online transactions, cost optimization, and supply chain financing to address the core needs of upstream and downstream manufacturing cycle clients.

¹⁰ Xiamen C&D Co., Ltd. Annual report for 2023 URL: <https://stockn.xueqiu.com/SH600153/20240415598685.pdf>

Built on four key elements — “Logistics”, “Information”, “Finance”, and “Trade” — LITF leverages Internet technologies, including the Internet of Things (IoT), to facilitate information sharing and extend supply chain services across all business processes of its partners.

SF Express Holding

Another Chinese company, the logistics group SF Express Holding, also maintains a strong market position and competitive advantages. In 2023, its revenue reached 258.4 billion yuan, securing its place as the largest logistics enterprise in China and Asia and ranking fourth globally among comprehensive logistics service providers (see *Table 2*).

SF Express Holding adheres to a long-term sustainable development strategy and forward-looking strategic planning, allowing it to optimally leverage business opportunities, im-

plement innovations, and expand its range of services in the logistics sector while collaborating with clients to navigate economic cycles.

The company’s advantages include:

1. Own diversified logistics network connecting Asia with the rest of the world. Through organic growth and external acquisitions, SF Express Holding continues to build a more advanced product system that covers the entire supply chain and offers diverse service scenarios within a single integrated logistics platform, connecting both domestic and international clients at all stages of service provision.

Due to its efficient and reliable logistics infrastructure, the company’s competitive advantages are continually growing: it is represented in all cities in China and 202 countries worldwide. The logistics group is the largest air carrier in the country, with a fleet of 103 cargo aircraft (owned and leased), performing 152 domestic

Table 2

SF Express Holding Economic Performance Indicators for 2021–2023

Indicator	2021	2022	2023	Difference between 2023 and 2021 indicators	Growth rate of the indicator in 2023 compared to 2021, %
Total assets, billion yuan	209.90	216.84	221.49	11.59	105.5
Total liabilities, billion yuan	111.98	118.56	118.21	6.23	105.6
Net assets, billion yuan	97.92	98.29	103.28	5.36	105.5
Revenue, billion yuan	207.19	267.49	258.41	51.22	124.7
Cost of goods sold, billion yuan	181.55	234.07	225.27	43.72	124.1
Gross profit, billion yuan	25.64	33.42	33.14	7.5	129.3
Net cash flow from operating activities, billion yuan	15.36	32.70	26.57	11.21	173.0
Weighted average return on net assets%	6.81	7.34	9.19	2.38	—

Source: compiled by the author based on the SF Holding Co., Ltd. URL: https://file.finance.sina.com.cn/211.154.219.97:9494/MRGG/CNSESZ_STOCK/2024/2024-3/2024-03-27/9901153.PDF

and international flights to 65 international airports.¹¹

The company has built and put into operation Asia's largest air cargo hub in Ezhou, which will help create a spoke network connecting China with foreign countries and enhance its competitiveness in delivery services. Additionally, SF Express Holding manages an extensive fleet of ground, rail, and maritime transport, providing customers with multimodal transport services for both domestic and cross-border shipments. It also operates 1,900 warehouses, 396 sorting centers, and more than 44,000 owned and agency service points worldwide. Notably, after acquiring and integrating Kerry Logistics, the company strengthened its presence in Southeast Asia and enhanced its international freight capabilities. Thanks to its diverse logistics network and high-quality services, SF Express Holding is able to collaborate with clients from various industries to create efficient domestic and international supply chains.

2. Leadership in various logistics segments in China and Asia as a whole. Using its highly efficient and dense network of offices, the company implements a "1 to N" expansion strategy, quickly transforming from a primary domestic express service provider into a leading global comprehensive logistics service provider. Due to its ability to offer fast, accurate, and secure door-to-door services, SF Express Holding is the absolute leader in the domestic express delivery market. In other segments, such as freight transportation, cold logistics, third-party urban delivery, and independent third-party supply chain solutions, the company also holds leading positions in the industry.

SF Express Holding independently manages the entire logistics chain at all stages, from collection to delivery. Its vertical management structure ensures a high degree of strategic unity ("top-down") and quick implementation of operational decisions, allowing the company to adapt promptly

¹¹ SF Holding Co., Ltd. URL: https://file.finance.sina.com.cn/211.154.219.97:9494/MRGG/CNSESZ_STOCK/2024/2024-3/2024-03-27/9901153.PDF

to market changes, successfully introduce new business models in a short period, and create powerful operational capabilities. This structure also facilitates dynamic resource management and standardization of all processes, enabling the company to maintain its position as the leader in service efficiency and customer satisfaction in the courier delivery sector for many years. Furthermore, this integrated approach allows SF Express Holding to provide both standardized and customized services that meet the ever-growing needs of clients. As a result, the company's share in the supply chain increases, key customer groups develop, and growth surpasses the industry average.

SF Express Holding is the only large-scale comprehensive logistics service provider in the country that operates independently from major e-commerce platforms, meaning it can serve all clients on equal terms. By the end of 2023, over 1.95 million.¹² consumers had utilized its services.

YTO Express

YTO Express is a leading integrated courier logistics operator in China. With hub sorting centers and a flat network of end franchisees, the company focuses on courier services. It promotes digital and intelligent development, actively improving the logistics ecosystem and expanding its activities in international markets. YTO Express, focusing on customer needs, also provides comprehensive services, including trade, air freight, and supply chain logistics.

As of the end of 2023, its courier service network covered all provinces, autonomous regions, and municipalities in China: prefecture-level cities and above were fully covered, and counties were covered by 99.89%.¹³

Throughout 2023, YTO Express dynamically optimized its network structure. By the end of the

¹² SF Holding Co., Ltd. URL: https://file.finance.sina.com.cn/211.154.219.97:9494/MRGG/CNSESZ_STOCK/2024/2024-3/2024-03-27/9901153.PDF

¹³ YTO Express Co., Ltd. Consolidated Annual Report 2023-2024 URL: <https://q.stock.sohu.com/newpdf/202457934748.pdf>

Table 3

YTO Express Economic Performance Indicators for 2021–2023

Indicator	2021	2022	2023	Difference between 2023 and 2021 indicators	Growth rate of the indicator in 2023 compared to 2021,%
Total assets, billion yuan	34.22	39.26	43.37	9.15	126.7
Revenue, billion yuan	45.15	53.53	57.68	12.53	127.8
Net cash flow from operating activities, billion yuan	4.01	7.39	6.04	2.03	150.6
Net profit billion yuan	3.44	3.78	3.60	0.16	104.7
Weighted average return on net assets,%	11.72	15.91	13.37	1.65	—
EBITDA to total debt ratio	1.58	1.96	1.64	0.06	—

Source: compiled by the author based on consolidated annual report of YTO Express Co., Ltd. 2023–2024. URL: <https://q.stock.sohu.com/newpdf/202457934748.pdf>

reporting period, the number of its franchisees reached 5,071, and the number of end delivery stores exceeded 82,000. The company opened 73 of its own hub sorting centers nationwide and installed 238 sets of automated sorting equipment. Its fleet of trunk transport vehicles totaled about 7,500 units, with 5,354 owned by the company. YTO Express owns 13 aircraft, including 2 Boeing 767–300s, 10 Boeing 757–200s, and 1 ARJ21–700, with the number continuing to grow.

In 2023, the company's revenue reached 57.684 billion yuan, and its net profit amounted to 3.6 billion yuan (see Table 3). The total number of deliveries during this period was 18.854 billion units.

The process of providing courier services by YTO Express consists of the following stages: parcel collection, sorting, trunk transportation, and delivery. Sorting is mainly carried out through the company's own hub sorting centers, while collection and delivery are handled through the franchisee network. YTO Express uses its own information platform to monitor operational nodes, manage routes, sorting centers, and franchisees,

as well as for billing, allowing complete control and tracking of the cargo lifecycle and oversight of the entire network's operations.

Parcel collection is carried out by franchisees in the sender's area — either through pick-up services or at their stores. Meanwhile, the company's information platform receives updates on the progress of this process via electronic waybills and PDA,¹⁴ automatically selecting the appropriate route from the database. Once collection is complete, franchisees perform preliminary sorting, package the items, and send them to the origin sorting center, where weighing, unpacking, final sorting, and repackaging of parcels occur. Next, the parcels are transported through air, road, or rail trunk services to the destination sorting center, where they are unpacked and distributed to franchisee delivery zones. The franchisees then receive the parcels and organize their delivery to recipients using YTO Express's systems "Xingzhe" and "Smart Delivery," which provide couriers with optimal routes, increasing efficiency and ensur-

¹⁴ PDA — Integrated logistics information processing platform

ing control and management of parcel deliveries throughout the network.

Responsibilities are divided as follows: franchisees are responsible for the operations of the end network, while the company handles route planning, trunk transportation, sorting, and coordinating all operational processes in the network.

The advantages of this model (due to centralized resource distribution) include strong control over the key nodes of the network and its high stability. In addition, the company uses an advanced information platform for monitoring and managing numerous franchisees and effectively controls service quality based on its own system of standards.

The lowest level of the courier service network consists of the final stores, the main ones being the “YTO Mama” stations. These are managed by franchisees within the operational and management system provided by the company. Their duties include collecting, delivering, and initial sorting of parcels. YTO Express and its franchisees make use of various social resources, including smart mail lockers, third-party stations, and “Cainiao” stations, which, together with “YTO Mama,” form a convenient and high-quality final delivery network.

Throughout 2023, the company continued to expand its international development strategy, implementing the “Express Delivery Abroad” project. YTO Express effectively utilizes the advantages of its global network of overseas stations, professional team, own air fleet, and extensive transport network, focusing on key markets and high-quality clients. The company continues to optimize the product matrix for cross-border logistics, expand international logistics chains, and develop multinational courier and supply chain businesses.

By strengthening its capabilities to provide integrated services, YTO Express aims to create a courier service platform that harmoniously coexists with partner platforms, using, as mentioned earlier, a management model with its own hub

sorting centers and a flat network of final franchisee stations.

Thus, as the process of building modern logistics systems accelerates, the intelligent solutions of leading Chinese companies in this segment are gradually being integrated into key operational scenarios, a significant part of which is the intelligent logistics service platforms. In creating these, companies rely on the modern capabilities of the industry to apply artificial intelligence to create applied solutions based on it — such as applications with full connectivity (for example, access to capacities and their assessment, warehouse/yard management, transportation execution, order tracking, etc.). These digital platforms can manage and deliver goods for the key participants of the logistics park¹⁵ (such as cargo owners, carriers, service providers, consignees, and drivers), effectively solving current issues of low levels of informatization, operational automation, and intelligent management of park assets, as well as investments and freight costs.

At the same time, the creation of a unified digital ecosystem for China’s logistics industry and its inclusion of national companies will allow the development and efficient use of transport portals through the application of intelligent logistics mini-programs. This will expand the possibilities of integrating logistics parks and contribute to their intelligent transformation.

CONCLUSION

Over the years of supply chain development, large companies with a high concentration of business have emerged in this field. However, in China, despite the significant growth rate of the industry and a large number of participants, concentration in the supply chain sector remains low, creating opportunities for growth. Leading Chinese enterprises can leverage economies of scale to gain advantages in procurement

¹⁵ The logistics park is a specialized economic and industrial zone.

prices, sales channels, logistics resources, capital costs, and risk management, thereby providing stable and efficient services to clients, reducing their costs, and improving efficiency. This will strengthen the positions of these enterprises and create a mutually beneficial cycle.

The specialization of production has become an important source of competitive advantages. An increasing number of industrial companies are focusing on research and development and manufacturing, while outsourcing procurement, sales, and logistics to professional supply chain operators. The practice of applying integrated intelligent supply chain services helps reduce operational costs for leading Chinese logistics companies and enhances their operational efficiency. Additionally, supply chain operators, by providing comprehensive services to small and medium-sized enterprises, contribute to their high-quality development.

The studied experience of leading Chinese logistics companies (Xiamen C&D Group Corp. Ltd., SF Express Holding, YTO Express) shows that they are actively transforming into supply chain service

providers by introducing digital transformation into the operations of their internal networks, creating innovative digital scenarios, and developing digital customer service capabilities. Leading market players continue to explore intelligent, autonomous, and visualized technologies, and in the long term, the highly efficient principle of their operations will penetrate an increasing number of manufacturing and consumer scenarios, gradually covering the entire logistics market. This will initiate technological upgrades and innovations, facilitate the digital transformation of supply chains, and reduce costs while improving efficiency.

According to international experience, modern enterprises in the logistics sector will continue their transformation and development by utilizing market opportunities to expand service offerings and strengthen resource integration across the supply chain. The increasing concentration in the industry will contribute to reforms and the consolidation of business in large, financially stable, and integrated companies with a wide range of services.

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