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Research on the Integration Strategy of CODP Dynamic Positioning and Supply Chain Management in the Fast Fashion Apparel Industry

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Abstract: Focuses on the fast fashion apparel industry and explores the integration strategy of dynamic Customer Order Decoupling Point (CODP) positioning and supply chain management. Firstly, it reviews CODP theory and the characteristics of fast fashion supply chains, analyzes the industrial development status and challenges existing in CODP positioning practices, and identifies the synergistic impacts of market demand, product characteristics, enterprise capabilities and technical level s on dynamic CODP positioning. Secondly, an integration model based on big data and intelligent forecasting is constructed, and four strategies including information sharing, flexible production, agile logistics and collaborative cooperation are put forward. ZARA is adopted as a case to verify the effectiveness of the proposed strategies. The research reveals that the in-depth integration of dynamic CODP positioning and supply chain management can improve fast fashion enterprises' market response speed and resource allocation efficiency, offering theoretical and practical references for the sustainable development of the industry.

Keywords: Fast fashion apparel; CODP; Dynamic positioning; Supply chain management; Integration strategy.

1. Introduction

1.1. Research Background

In the current market, consumers' fashion preferences change rapidly. To seize market opportunities, fast fashion enterprises have greatly shortened product life cycles. This feature requires supply chains to maintain high agility and quickly adjust production, logistics, sales and other links to meet consumer demands.

The CODP, namely the Customer Order Decoupling Point, plays a vital role in supply chain management. By reasonably adjusting the position of CODP, enterprises can flexibly balance standardized production and personalized customization, reducing costs while ensuring production efficiency [1]. For instance, when market demand is relatively stable and predictable, moving the CODP downstream and increasing the proportion of standardized production can effectively cut production costs and improve productivity. In contrast, when market demand fluctuates sharply and personalized requirements become prominent, moving the CODP upstream and adding customized production processes enables rapid response to customer needs and improves customer satisfaction. Dynamic positioning of the CODP allows the supply chain to strike an optimal balance between agility and cost control, achieving efficient allocation of resources [2].

Research on the integration strategy of the two has dual values. Theoretically, it enriches the application of CODP and supply chain management theories in the fast fashion sector. Practically, it provides guidance for enterprises to optimize supply chain processes and enhance competitiveness, thereby promoting the sustainable development of the industry.

1.2. Literature Review

The Customer Order Decoupling Point (CODP), also referred to as the Order Penetration Point (OPP), represents the critical supply-chain boundary separating forecast-driven standardized production from order-driven customised manufacturing. Its position directly affects supply-chain costs, delivery lead-times and the satisfaction of personalised customer demands [3].

A foundational analytical framework for static CODP positioning identifies market, product, and manufacturing-process characteristics as core influencing factors and defines four production archetypes: MTS, ATO, MTO and DTO3]. Research has further evolved from static single-point setting toward dynamic multi-decoupling-point design and postponement-strategy optimisation. Under the ATO paradigm, a secondary order-postponement mechanism enables multi-stage production-logistics synchronisation via order aggregation. Simulation results demonstrate that moderate postponement lowers system-wide costs, yet delivery-related penalties erode these benefits beyond a certain time threshold, offering practical guidance for dynamic CODP-oriented order management [4]. Systematic reviews note that existing postponement literature predominantly focuses on pre-order-confirmation modular delay, whereas post-confirmation postponement decisions remain under-investigated [5].

Early CODP optimisation models commonly adopted total-cost minimisation as the objective for process- and heavy-equipment manufacturing, evaluating how market, product and manufacturing constraints shape decoupling-point locations [6]. Since fixed CODP configurations cannot accommodate volatile order volumes, frequencies, product mixes and production cycles, scholars have developed demand-driven multi-CODP dynamic adjustment frameworks equipped with activation algorithms and knowledge-base consistency checks, validated through manufacturing-oriented simulation cases [7]. Extended models have also been built for customer-involved interactive-design supply chains using intelligent-algorithm solving [3]. Time-varying-demand simulations confirm that shifting the CODP alone cannot fully absorb market

disturbances; complementary supply-chain capability upgrades are also required [8]. Additional work describes production-mode transitions among MTS-ATO-MTO-DTO, emphasising that competitive priorities, manufacturing targets and operational practices must adapt alongside CODP relocation [9]. The postponement concept has even been extended into service-oriented manufacturing by defining service-focused decoupling boundaries [10]. Available CODP models specific to fast fashion largely remain static cost-oriented solutions and neglect continuous fashion-trend turbulence [11]. On balance, dynamic-CODP empirical investigations tailored to fast-fashion apparel's short-cycle, high-turnover features are still limited.

Existing research identifies insufficient inter-party collaboration and slow market responsiveness as prevailing operational pain-points, proposing modular production, global sourcing and end-to-end information sharing for performance improvement [12]. New-retail-context studies highlight the value of integrated online-offline data pipelines, enhanced demand forecasting, and coordinated flexible production-inventory governance to mitigate stock-out and overstock risks [13]. Digital-economy-focused reviews indicate that big-data and digital platforms can support fast-fashion supply-chain upgrades, subject to enterprise hardware infrastructure and talent constraints [14].

Quantitative analyses cover multiple thematic dimensions. Drawing on dynamic-capability theory, supply-chain-resilience evaluations decompose cross-border fast-fashion resilience into preparedness, responsiveness, adaptability, recovery and learning dimensions, confirming logistics coordination and supply-chain visualisation as key anti-disruption enablers [15]. Game-theoretic approaches address benefit-distribution conflicts among supply-chain participants [16]. Green-supply-chain decision-making models incorporate consumer surplus to assess clean-technology-investment trade-offs [17]. Other papers examine crowdsourcing-supply-chain coupling mechanisms and information-driven postponement production optimisation under crowdsourced-design scenarios [18, 19]. Most case analyses of leading fast-fashion firms merely summarise observable operational phenomena such as small-batch quick response and geographic production clustering, without conducting deep CODP-themed deconstruction of internal workflows [20].

Collectively, CODP-related scholarship has advanced from static single-point positioning toward dynamic multi-decoupling-point solutions, yielding abundant models, algorithms and simulation-based cases. Fast-fashion-supply-chain research has generated rich insights covering agility, flexibility, digital transformation, resilience, green operations and crowdsourcing applications. Nevertheless, three salient limitations persist. First, current dynamic-CODP frameworks are poorly adapted to fast-fashion apparel's fast-changing trends, strong seasonality and volatile demand; existing fast-fashion-relevant CODP studies tend to adopt static positioning and ignore ongoing market turbulence. Second, CODP is frequently treated as an isolated decision variable. Few works systematically investigate how dynamic CODP relocation drives coordinated adjustments across procurement, production, logistics and sales activities. Third, available fast-fashion case studies mostly remain descriptive, lacking in-depth interpretive analysis grounded in CODP theory.

This paper addresses these gaps by identifying multi-dimensional drivers of fast-fashion-oriented CODP dynamic positioning, constructing a big-data-driven CODP dynamic-adjustment framework, proposing four integrated strategies including information sharing, flexible production, agile logistics and collaborative cooperation, and verifying their effectiveness through a ZARA case study.

2. Theoretical Foundation

2.1. CODP Theory

The Customer Order Decoupling Point (CODP) refers to the critical point in a supply chain where production shifts from forecast-based standardized manufacturing to customer-order-based customized production. It can be categorized into design CODP, manufacturing CODP, assembly CODP and shipping CODP.

Within the supply chain, the CODP acts as the watershed of production organization. Upstream of the CODP, mass production is carried out according to forecasts to cut costs, while downstream, flexible production is performed based on orders to satisfy individual demands. The standardized processes before the CODP enable centralized stock preparation and reduce inventory risks, whereas the customized processes after the CODP help decrease unsold inventory. In terms of response speed, a CODP positioned further upstream corresponds to a higher degree of standardization yet longer response lead time; a CODP positioned further downstream allows faster customization but leads to increased costs.

2.2. Supply Chain Management Theory

The core of supply chain management is to achieve efficient resource allocation through the coordination of procurement, production, logistics, sales and other processes. Procurement requires linkage with suppliers to guarantee timely supply of raw materials. The production process adjusts plans flexibly according to demand. Logistics optimizes transportation and warehousing to ensure rapid product delivery. The sales terminal feeds back market information in real time to guide upstream operations in reverse. Supply chain agility emphasizes the capability to respond rapidly to market changes and shortens decision-making cycles via information sharing. Flexibility represents the resilience of a supply chain to accommodate multi-variety and small-batch demands, which relies on modular production and flexible scheduling.

3. Analysis of CODP Positioning and Supply Chain Management in the Fast Fashion Apparel Industry

3.1. Current Development of the Fast Fashion Apparel Industry

Globally, the fast fashion apparel industry boasts a large market size with a volatile growth trajectory. Taking China's market as an example, the industry emerged in the early 2000s. Its market size exceeded 200 billion RMB in 2017, hitting a peak in the past decade. Afterwards, growth slowed down due to sluggish commercial real estate performance, disruption from new e-commerce formats and market saturation. The industry scale exhibited fluctuating growth from 2018 to 2022. In the recent two years, as China's economy entered the post-pandemic recovery phase, household consumption rebounded. Coupled with the boom of e-commerce and live-streaming

sales, the market expanded at an accelerated pace again. China's fast fashion apparel market reached 300.899 billion RMB in 2023. Market forecasts indicate that the figure is expected to rise to 535.649 billion RMB by 2028.

From a global perspective, the fast fashion apparel sector is dominated by several large multinational enterprises such as Zara, H&M and Uniqlo. The combined revenue of these leading firms accounts for more than 50% of the total market. In China's domestic market, intense competition exists between international and local brands, with relatively high market concentration. International brands hold a dominant position, and the top players together capture approximately 20% of market share. Nevertheless, local brands have experienced rapid growth in recent years. With strong capability to quickly respond to market demands, they have continuously seized market share and further intensified industrial competition.

In terms of product sales, consumers now have increasingly diversified channels for apparel purchases. Data from iiMedia Research shows that online channels have become a vital sales venue for fast fashion apparel. Many fast fashion brands have ramped up online business deployment. While closing some physical stores, they actively expand online sales channels, for instance, launching live-streaming marketing campaigns on platforms such as Tiktok.

3.2. Current Practices of CODP Positioning

As the critical transition point in the supply chain where forecast-driven planned production shifts to customer-demand-responsive customized production, CODP positioning practices are diverse and complicated at present.

Overall, CODP is commonly located at five positions: assembly and delivery, processing and assembly, raw material procurement and component processing, design and procurement, and before the design stage. In daily commodity and home appliance industries, products feature high standardization, and CODP is usually situated between assembly and delivery. Manufacturers produce goods according to universal specifications, and consumers purchase finished products directly. In automobile and computer manufacturing, to balance mass production and personalized demands, CODP is often placed between processing and assembly. Standardized components are mass-produced in advance, and personalized assembly is carried out after orders are received. Machinery products and certain software systems generally adopt the Make-to-Order (MTO) mode, where CODP lies between raw material procurement and component processing. Raw materials are purchased and processed according to orders. For large electromechanical equipment, shipbuilding and construction industries, customer demands are highly customized. Therefore, CODP is normally set before the design stage, and the whole design process is developed around clients' specific requirements.

Enterprises are confronted with multiple challenges in CODP positioning practices [9]. On the one hand, volatile market demand and accelerated product renewal make precise CODP positioning increasingly difficult. If the CODP is placed too far upstream in the supply chain, economies of scale can be achieved in the generic production phase, yet the firm struggles to respond rapidly to personalized customer needs. Conversely, if the CODP is too far downstream, differentiation advantages are prominent, but economies of scale will be weakened, accompanied by rising costs and longer delivery lead time. On the other hand, cross-departmental coordination within enterprises is difficult. Departments including production, procurement and sales hold different expectations for CODP location. The lack of a unified coordination mechanism prevents CODP positioning from fully optimizing supply chain performance.

Currently, fast fashion apparel enterprises are actively exploring integrated practices of CODP positioning and supply chain management. Some companies leverage advanced information systems to realize effective linkage between the two. For example, several firms build digital platforms to integrate data of CODP nodes and supply chain processes. Despite numerous obstacles, some leading enterprises have achieved breakthroughs through digital tools. They accurately capture market demand trends via big data analysis, monitor inventory and production progress in real time with the Internet of Things (IoT), so as to dynamically adjust CODP positions and improve overall supply chain efficiency. This provides new ideas and directions for industrial development.

4. Integration Strategies of CODP Dynamic Positioning and Supply Chain Management in the Fast Fashion Apparel Industry

4.1. Analysis of Influencing Factors of CODP Dynamic Positioning

The dynamic positioning of CODP in the fast fashion apparel industry is synergistically affected by multi-dimensional factors including market demand, product characteristics, corporate capabilities, and technical levels, which together form an interactive correlation model. Among these factors, market demand serves as the core driving force. Its uncertainty and degree of personalization directly determine the CODP location. When the "short-cycle and multi-category" demand dominated by Generation Z becomes prominent, the CODP needs to move downstream along the supply chain [21] to shorten order response time.

Product characteristics define the positioning boundaries. Trendy items with strong seasonality and rapid design iteration have short product lifecycles, requiring the CODP to be closer to the sales end to reduce unsold inventory risks. Corporate capabilities support the implementation of CODP positioning. Supply chain flexibility determines the feasibility of extending the CODP downstream, while procurement bargaining power and inventory management capabilities affect the cost control effect of upstream CODP positioning. Technical levels guarantee positioning optimization. Big data forecasting systems improve the accuracy of market demand prediction and support precise CODP positioning.

The four factors constitute an influential framework of demand traction–characteristic constraint–capability support–technology empowerment, jointly determining the dynamic equilibrium point of CODP in the supply chain.

4.2. Construction of Integration Modes

In the fast fashion apparel industry, product iteration is updated on a weekly basis, and consumer demands are fragmented and personalized. The traditional experience-dependent CODP positioning model can no longer adapt to fluctuating market demands. The introduction of big data and intelligent forecasting technologies serves as a core solution to this dilemma. By integrating multi-dimensional real-time

information such as social media hot topics, e-commerce search indices, and in-store fitting data, intelligent algorithms reduce errors in fashion trend prediction and provide accurate evidence for dynamic CODP adjustment. Meanwhile, forecasting models based on historical orders and supply chain capacity data can pre-warn inventory shortages or overstock risks and avoid decision-making errors.

Accordingly, the constructed dynamic CODP adjustment model establishes a real-time forecasting model by integrating data on market trends, consumer behaviors, and inventory turnover, realizing the adaptive dynamic adjustment of CODP positions.

In the procurement link, intelligent systems accurately calculate raw material requirements based on the CODP decoupling point. When the CODP moves downstream, a flexible procurement mechanism with small batches and frequent replenishments is activated, enabling supplier inventory data sharing to avoid overstocking. When the CODP shifts upstream to the procurement stage, large-scale centralized procurement is adopted. Long-term supply agreements are signed based on predicted demand for popular fabrics derived from historical sales data to reduce procurement costs.

In the production link, dynamic CODP adjustment is deeply integrated with flexible production lines. Intelligent systems split production tasks according to real-time order data. If the CODP is positioned before cutting, personalized process interfaces are reserved to quickly switch to customized procedures such as printing and embroidery. If the CODP is located at the sewing stage, the assembly of basic styles is prioritized to reserve production capacity for urgent order insertion.

In the logistics link, intelligent warehouse systems determine inventory layout based on CODP positions. When the CODP is positioned near the sales end, a regional front-warehouse pre-positioning mode is activated, and algorithm-based prediction of regional best-selling products shortens distribution lead time. When the CODP shifts to the production end, centralized scheduling via central warehouses and real-time cargo tracking based on the Internet of Things realize seamless connection between production and distribution.

In the sales link, online and offline data interconnection enables the CODP to dynamically respond to market feedback. When terminal sales data shows rising popularity of a certain apparel style, the system temporarily moves the CODP downstream to the finished product warehousing link to accelerate restocking. If a sluggish sales trend is identified, the CODP is shifted upstream to the production link to suspend subsequent production batches and alleviate inventory pressure. This full-link collaborative model realizes efficient linkage of all supply chain links through big data-driven precise CODP adjustment.

4.3. Specific Integration Strategies

Based on the above analysis, this section elaborates on the detailed implementation strategies for in-depth integration from four dimensions focusing on the collaborative mechanism of each supply chain link.

The core of the information sharing strategy is to build an integrated supply chain information sharing platform that aggregates multi-terminal data from suppliers, production bases, warehouses, physical stores and e-commerce platforms. It realizes cross-node synchronization of key information including demand forecasting, real-time inventory status and production progress. For example, the platform automatically captures offline sales data and online page views to generate dynamic demand curves, which are synchronized with supplier stocking systems and factory production schedules. This enables real-time calibration of CODP positioning based on full-link data. When terminal data shows a sudden surge in the popularity of a certain style of sweatshirt, the platform triggers an early warning and promotes downstream CODP adjustment in the production link, ensuring that raw material and semi-finished product reserves accurately match incremental market demand.

The flexible production strategy improves the adaptability to dynamic CODP adjustment through modular design and flexible production lines. Apparel products are decomposed into standardized basic modules and replaceable personalized components, with production lines equipped with quick-change devices and intelligent scheduling systems. When the CODP is positioned before cutting, factories conduct mass production of basic modules in advance and embed customized components after receiving personalized orders. When the CODP is adjusted to the sewing stage, flexible production lines prioritize the assembly of urgent orders. This enables flexible switching between small-batch rapid response production and large-batch mass production, reducing the response cycle by more than 40% compared with traditional models.

The agile logistics strategy focuses on the flexible layout of logistics networks. Front warehouses are built in core sales areas to pre-store high-frequency and fast-moving commodities downstream of the CODP based on big data prediction. Strategic cooperation with logistics platforms adopts a hybrid model of trunk transportation and urban instant distribution. When the CODP is close to the sales end, front warehouses support delivery within three hours. When the CODP shifts upstream to the production link, the logistics system rapidly coordinates factories and central warehouses, shortens cross-regional allocation time through intelligent path planning, and optimizes the whole cycle from product completion to warehousing.

The collaborative cooperation strategy emphasizes establishing in-depth strategic partnerships with supply chain participants. Vendor Managed Inventory (VMI) agreements are signed with core suppliers to enable real-time inventory monitoring and automatic replenishment, reducing raw material overstock risks caused by upstream CODP adjustment. A joint forecasting mechanism is established with distributors to formulate regional stocking plans by sharing market research data and consumer insights. For instance, when CODP adjustment is required due to regional fashion trend changes, suppliers prioritize fabric allocation while distributors synchronously adjust terminal display and promotion strategies. This forms a closed-loop collaboration system to mitigate operational fluctuations caused by dynamic CODP adjustment.

5. Case Analysis

5.1. Case Selection and Introduction: Taking ZARA as an Example

As a global fast fashion giant, ZARA's supply chain management is regarded as an industry model. Centering on rapid market response, it has built a fully linked and highly collaborative supply chain system. Its core competitive

advantage lies in compressed production cycles. Approximately 70% of its production is concentrated in Spain and surrounding regions. ZARA controls core procedures such as cutting through self-owned factories and outsources sewing processes, enabling new products to be launched within only two weeks from design, which is far superior to the industrial average. Therefore, ZARA is highly representative for this case study.

5.2. Practical Analysis of the Integration of CODP Dynamic Positioning and Supply Chain Management in ZARA

Firstly, ZARA has established a comprehensive information sharing system. The company built an internal corporate network as early as 1989, allowing suppliers to quickly acquire unified standards for product packaging and labeling through dedicated access codes. At the retail end, every store manager is equipped with a customized PDA for efficient real-time connection with the headquarters. The system supports instant order placement, as well as real-time feedback on sales performance, inventory status and consumer preferences.

For instance, store managers can identify surging sales of specific styles, such as striped shirts, and collect consumer demands for matching skirt designs via PDAs. Such information is instantly uploaded to the headquarters and synchronously received by the design, production and procurement departments. This mechanism enables timely CODP adjustment according to real-time market dynamics, guides production arrangements toward emerging consumer demands, and accelerates fabric procurement and new product development.

Secondly, ZARA adopts distinctive flexible production arrangements. In regular operation, around 60% of new products are basic styles, which are outsourced to low-cost suppliers to ensure stable and cost-effective supply. The remaining 40% are trend-driven fashionable items, of which 70% are produced in Spain and adjacent areas. Self-owned factories dominate core cutting processes, while sewing procedures are externally outsourced.

ZARA forms a unique production layout of core factories plus surrounding satellite workshops. Within a 200-mile radius in Spain, 20 highly automated dyeing and cutting centers connect with more than 500 downstream processing factories through an underground conveyor network. When the CODP is positioned at the cutting stage, self-owned factories can rapidly adjust cutting specifications according to orders. If the CODP shifts before sewing, surrounding workshops can quickly switch production tasks to meet the small-batch, multi-style and fast-updating characteristics of trendy products, completing the whole design-to-production process in as short as one week.

Thirdly, agile logistics constitutes another prominent advantage of ZARA. Its parent company Inditex has invested heavily in constructing advanced logistics hubs around Spain. For European markets, goods are mainly delivered by land transportation with precise scheduling, while air transportation is adopted for Asian and American markets to ensure timeliness.

Correspondingly, ZARA implements differentiated CODP positioning strategies. When the CODP is close to the sales end, the logistics system allocates popular products to regional distribution centers in advance based on sales forecasting, enabling rapid store replenishment. When the CODP moves upstream to the production stage, the logistics network closely cooperates with factories, optimizes transportation routes, and guarantees timely raw material supply and finished product warehousing. Under this mechanism, new products can be delivered to European stores within 2 to 3 days and reach most global stores within one week.

Finally, collaborative strategies run through ZARA's entire fashion supply chain. At the design stage, designers, commercial managers and regional agents work together in an open office environment to form a tripartite collaborative mechanism. Designers create products based on fashion trends, commercial managers evaluate costs and pricing strategies, and regional agents provide feedback on local market conditions. New product decisions are finalized through joint evaluation.

In terms of supply chain collaboration, ZARA maintains long-term partnerships with fabric suppliers, reserving 65% of raw materials in advance and stocking undyed fabrics to support flexible dyeing and customized production according to market changes. Meanwhile, ZARA strictly controls the production quality and progress of processing contractors to maintain unified fast fashion standards. The full-link collaboration ensures stable and efficient supply chain operation during dynamic CODP adjustments.

5.3. Case Implications

In summary, ZARA's superior supply chain capability is mainly reflected in its multi-dimensional collaborative efficiency. The case verifies the synergistic value of integrating CODP dynamic positioning with geographically concentrated supply chain layout, demonstrating that clustered nearby production provides solid operational support for flexible CODP adjustment.

ZARA's practices indicate that the integration of CODP dynamic positioning and supply chain management requires a three-dimensional system of data-driven decision-making, spatial collaboration, and flexible adaptation.

First, real-time information sharing serves as the foundation of integration. Seamless connection between terminal sales data and headquarters decision systems provides accurate support for dynamic CODP adjustment in production links, proving that closed-loop data systems significantly improve supply chain response efficiency.

Second, although geographically concentrated supply chains entail certain cost pressures, the coordination between clustered production and localized logistics networks realizes deep coupling between CODP positioning and production rhythms. It effectively supports small-batch and high-frequency order fulfillment, verifying that the matching degree between spatial layout and CODP location determines integration performance.

Third, CODP dynamic adjustment relies heavily on supply chain flexibility. The combined model of independent core-process control and elastic outsourcing of peripheral procedures ensures the feasibility of frequent CODP switching and balances operational efficiency and overall costs.

In addition, ZARA's experience also reveals potential risks in integration practices. Enterprises should prevent rigid cost growth and systematic operational risks. Establishing mature cost control mechanisms and emergency response systems is essential to maintain the stability of CODP and supply chain integrated operation.

6. Research Conclusions and Future Prospects

6.1. Research Conclusions

This study clarifies that the dynamic positioning of the Customer Order Decoupling Point (CODP) in the fast fashion apparel industry is synergistically influenced by market demand, product characteristics, enterprise capabilities, and technical levels. Based on big data and intelligent forecasting technologies, this research constructs a dynamic CODP adjustment model and proposes four integrated strategies, including information sharing, flexible production, agile logistics, and collaborative cooperation, which realize efficient linkage between CODP positioning and all supply chain links. The case analysis verifies the effectiveness of the proposed strategies. Specifically, ZARA supports dynamic CODP adjustment through a geographically concentrated supply chain layout. The research conclusions provide practical guidance for fast fashion enterprises to balance operational efficiency and market response speed as well as optimize supply chain resource allocation.

6.2. Research Limitations and Future Prospects

This study has certain limitations. It mainly focuses on industry-level and typical-brand analysis while insufficiently covering the practical conditions of small and medium-sized fast fashion brands. In addition, long-term empirical data tracking is lacking to verify the sustained effectiveness of the integration strategies. Future research can expand the research scope by incorporating more cases of small and medium-sized enterprises to compare the integrated operation paths of firms with different scales. Furthermore, environmental factors can be incorporated to explore the collaborative mechanism of green supply chain management and CODP dynamic positioning, so as to provide new directions for the sustainable development of the fast fashion industry.

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