

Research on the Collaborative Effects of Live-streaming Sales and Community-based Supply Chain: A Case Study of “He Shi You Xuan”

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Abstract: The development of the digital economy has led to an increasingly close integration of e-commerce and supply chains. Many businesses have introduced live streaming for product promotion to boost sales and reduce shopping costs for users. China's vast online population provides extensive opportunities for the development of e-commerce. Previous research on e-commerce and supply chains has primarily focused on the impact and challenges that e-commerce poses to supply chain management. However, there is limited research on the key aspects affecting customer experience. The analysis covers various aspects, including logistics cost control, time cost control, service levels, user stickiness, inventory backlog, and live streaming cost control. By examining this novel combination of e-commerce and community-based supply chains, the paper aims to provide theoretical insights for exploring and optimizing the integration of e-commerce and community-driven supply chain models, ultimately enhancing e-commerce services.

Keywords: Live-streaming sales, e-commerce, community, supply chain, collaborative effects

1. Introduction

On August 28, 2023, the China Internet Network Information Center (CNNIC) released the 52nd "Statistical Report on Internet Development in China." The report indicates that as of June 2023, the number of internet users in China has reached 1.079 billion, an increase of 11.09 million compared to December 2022. The internet penetration rate in China has reached 76.4%. In the first half of 2023, the total online retail sales in China reached 7.16 trillion yuan, a year-on-year increase of 13.1%. Of this, the online retail sales of physical goods amounted to 6.06 trillion yuan, with a growth of 10.8%. The proportion of online retail sales of physical goods to the total retail sales of consumer goods reached 26.6%, steadily increasing its share in consumption. As of June, the number of online shopping users in China reached 884 million, an increase of 38.8 million compared to December 2022, accounting for 82.0% of the overall internet user population [1].

In China, live-streaming e-commerce platforms are primarily categorized into three main types: e-commerce platforms, content platforms, and social platforms. E-commerce platforms are represented by platforms such as Taobao, JD.com, and Pinduoduo. Content platforms: represented by platforms like TikTok, Kuaishou, and Xiaohongshu. And social platforms are represented by platforms such as

Weibo and Tencent's Kandan live streaming. However, apart from these mainstream platforms have only a few thousand viewers but exhibit strong user engagement and loyalty. These independent platforms often cater to niche markets or specific interests, and while they may not have the massive audience of larger platforms, they benefit from a highly dedicated user base.

Currently, the integration of e-commerce and supply chains faces numerous challenges. Compared to other industries, the relationship between logistics efficiency and customer loyalty in the e-commerce sector is particularly close, making logistics a key factor influencing customer satisfaction [2]. E-commerce order volumes may be relatively small, but the transportation of these orders is highly complex, demanding a broad range of logistics capabilities. Customers have high expectations for service quality, especially in the context of last-mile delivery. Last mile delivery refers to the final stage of the transportation process where goods are delivered from a distribution center or transportation hub to the end-users destination, often their home or a retail store. It's a critical step in the supply chain and is known for being the most expensive and time-consuming part of the delivery process. Companies aim to optimize last-mile delivery for efficiency and customer satisfaction. The logistics capabilities of a company play a crucial and positive role in the overall logistics performance of the e-commerce market. The necessity of controlling the quality of last-mile delivery services is paramount for the future logistics model of e-commerce.

From the perspective of a community-based supply chain, community-centric enterprises face challenges in managing transactional supply chain relationships, leading to high transaction costs and low creation of shared value [3]. In the past, scholars have put forth various improvement suggestions in the realm of e-commerce and supply chains. Compared to traditional systems, e-commerce systems lack comprehensive cost analysis, necessitating the integration of existing building blocks to understand crucial cost components. The chosen delivery methods and sorting techniques in e-commerce play a crucial role in cost control. Additionally, returns have an impact on logistics costs and the service level for shoppers [4]. Relationship management plays a crucial role in managing uncertainty in the e-commerce environment. Logistics involves information and relationship management, providing incalculable value in helping businesses succeed in this dynamic environment [5]. Establishing a community-based supply chain can play a significant role in redefining the food supply chain and overcoming organizational and infrastructure limitations faced by small and medium-sized enterprises in agriculture and food production [6]. With the development of the digital economy, the interdependence between e-commerce and competition highlights the importance of efficient, low-cost supply chains for enhancing competitiveness in e-commerce. Live streaming, as an emerging model, not only helps users save time and shopping costs but also makes e-commerce services more comprehensive, high-quality, and customized. Previous research on e-commerce and supply chains primarily focused on the impact and challenges that e-commerce poses to supply chain management, mainly in the context of B2C transactions. In recent years, there has been a heightened expectation from customers regarding the quality of e-commerce services. From community storefronts to the last mile delivery to customers, these aspects are crucial factors influencing customer experience, but there has been limited research on this issue. In this regard, this paper aims to study the "He Shi You Xuan" supply chain model. Through analysis in areas such as logistics cost control, time cost control, service level, user stickiness, inventory backlog, and live streaming cost control, the paper intends to explore a new model of combining e-commerce with a community-based supply chain. The goal is to provide theoretical insights for optimizing e-commerce services.

2. Analysis of the “He Shi You Xuan” Supply Chain

2.1. Current Status of the “He Shi You Xuan” Supply Chain

Community-based delivery has the potential to significantly increase the utilization and accessibility of various medical goods and services, especially for underserved populations. Community delivery programs have played and will continue to play a crucial role globally in providing customers with health information, services, and products [7].

Taking the "He Shi You Xuan" brand, which has numerous stores in the Chengdu region, as an example: The sales model of "He Shi You Xuan" combines online and offline approaches. It not only provides live-streaming sales services to customers but also has dedicated stores offering product pickup services.

After becoming a member upon entering "He Shi You Xuan" stores, customers can join the store's live-streaming group to shop by watching live broadcasts. After each live stream, customers only need to specify the product specifications and quantities they wish to order within the group. Store staff will then tally the customer's orders. During the ordering stage, customers do not need to pay for the products. Once the ordered items arrive at the store, the staff will notify the customer to come and pick up the goods, and payment is made at the time of pickup.

The customer profile of "He Shi You Xuan" primarily consists of individuals aged 55-80, residing near the stores. These are senior citizens who may not be adept at using electronic devices to precisely search for products online. This user profile is a result of a mutual choice between "He Shi You Xuan" and its customers. For the elderly, online shopping is a product of the Internet economy with a high learning curve, and the emergence of "He Shi You Xuan" meets the demand for online shopping among this demographic. From the perspective of "He Shi You Xuan," customers aged 55 and above generally have retired, have ample time to watch live-streaming sales, and are more conducive to increasing the company's revenue.

"He Shi You Xuan" offers a wide range of products in its live-streaming sales, spanning from daily necessities to regional specialties. The products vary significantly in price, ranging from lipsticks priced at 9.9 yuan for two to sea cucumbers costing 999 yuan per bag. It can be said that "He Shi You Xuan" provides a diverse selection of products for its customers, meeting various needs, lowering the customer usage threshold, and saving their shopping time costs.

"He Shi You Xuan" exhibits high user stickiness. As of November 30, 2023, there are a total of 35 stores and 20,711 members in the Chengdu region. "He Shi You Xuan" consistently starts live-streaming at 8:00, 12:00, and 19:40 daily, with each session lasting approximately an hour. Taking the example of the live stream on the morning of November 30 at 8:00, it had 9,571 viewers, with a user viewing rate of 46%. Among the viewers, 8,316 people watched for more than 30 minutes, constituting 87% of the total viewership. Live-streaming sales differ from on-demand online videos, and having fixed broadcast times makes it more challenging for users to watch the live stream promptly. The high viewer rate indicates that "He Shi You Xuan" has high user stickiness, with nearly half of its customers tuning in to the live stream every day.

2.2. Analysis of Existing Problems

Physical stores are positioned at the end of the entire product supply chain and represent the last step for customers to obtain goods. These stores tally the total number of products ordered by customers through group purchases in the live-streaming room each day, report it to the company, and then the company uniformly dispatches the goods to the store. This approach saves on logistics costs for separately delivering products to customer addresses and reduces sorting and packaging costs.

Compared to mainstream e-commerce sales methods, eliminating the last-mile delivery and saving packaging costs collectively reduce the logistics costs for users.

Additionally, because customers reside in the neighborhoods around the stores, picking up goods from the store takes only a few minutes, not occupying a significant amount of customers' time. From the perspective of behavioral economics, customers tend to ignore the time cost of a few minutes to pick up goods in-store. Moreover, customers can freely choose the time to pick up goods; items purchased within a week or half a month can be collected once all items are available, saving the time cost of individual shopping trips.

The combination of live streaming and a community-based supply chain model by "He Shi You Xuan" reduces users' logistics costs compared to mainstream e-commerce live streaming. Moreover, compared to well-stocked supermarkets, it offers more group purchase discounts. Since the stores are located near users' communities, the shopping distance is even shorter than that of a supermarket. These aspects enhance user stickiness.

The unique live streaming reward system has increased both viewership and completion rates for live broadcasts on "He Shi You Xuan." Members of "He Shi You Xuan" can earn points through two methods. The first method is to accumulate 1 point by watching each live broadcast for at least 30 minutes and checking in three times. The second method involves earning points based on a 5% cashback for each payment made during in-store pickup. For example, spending one hundred yuan would yield 5 points. These points can be used as cash deductions during the pickup process, with each point equivalent to a 0.5 yuan discount. The points serve as an incentive for members to watch live broadcasts, thereby increasing their purchase rates. Additionally, they can accumulate and redeem points during offline pickups. As the points may not cover the entire cost of the products each time, customers end up using some points and paying the remaining amount during pickups, creating a cycle of point accumulation and redemption with every live broadcast and purchase. This not only motivates customers to make purchases but also increases the likelihood of them becoming repeat customers.

"He Shi You Xuan" increases user stickiness through improved return services and service levels. After watching a live-streaming sales session, users place orders and reservations without having to pay in advance. Once the goods arrive, store staff notify customers to come to the store to pay and pick up the items. "He Shi You Xuan" promises customers that they can inspect the quality of the goods before payment, and if the items are not satisfactory, they can refuse to pay. For non-consumable products, they also provide a return service if the customer is unsatisfied with the product's performance after use. This approach allows customers to enjoy the discounted prices of online group purchases without bearing the risk of goods not meeting expectations in traditional online shopping models. Therefore, the user stickiness of "He Shi You Xuan" is extremely high, with a stable number of consumers watching live-streaming sales and stable sales quantities.

However, due to the relatively small service areas of each store, serving approximately 300-1200 people, both foot traffic and product demand are not high. Therefore, situations arise where customers do not pick up goods promptly or do not need the items upon arrival at the store. Unsold goods are not easily sold to other non-ordering customers, leading to an inventory accumulation issue. This is a common occurrence for various "He Shi You Xuan" stores, and the sales cycle for accumulated products often exceeds one month.

When suppliers engage in live-streaming sales with significant fixed costs, they may choose to adopt the model of hiring internet-famous hosts for live-streaming sales. However, suppliers engaging in live-streaming sales tend to have strict control over product quality [8]. Leveraging its exceptionally high user stickiness and the characteristics of community-based services, "He Shi You Xuan" does not need to incur high commissions by hiring internet-famous hosts to increase traffic and boost sales. Instead, the company has dedicated product selection hosts who conduct live-

streaming broadcasts directly from the suppliers' production sites. In this regard, the hosting costs for "He Shi You Xuan" are lower compared to mainstream e-commerce live streaming, and there is no need to provide the hosts with high commissions, which benefits the company's overall efficiency.

Conducting live-streaming sales directly from the suppliers' production sites provides better control over product quality compared to the model of internet-famous hosts. This approach is more conducive to ensuring a high level of control over product quality.

3. Results and Discussion

The live-streaming sales and community-based supply chain collaboration model of "He Shi You Xuan" reduces logistics costs compared to mainstream online shopping, providing more considerate and personalized return services. In comparison to traditional physical store shopping, it broadens the range of product choices, enhances product diversity, and reduces the time spent on in-store shopping. The exceptionally high user stickiness of "He Shi You Xuan" is a crucial factor enabling its continuous operation and development within such a small user base.

Although "He Shi You Xuan" caters to the sales model convenient for middle-aged and elderly individuals, it has the potential to expand its reach to a younger audience. While courier services typically do not provide doorstep delivery, requiring consumers to pick up items from service points after making online purchases, "He Shi You Xuan" integrates the live-streaming room with service points. However, "He Shi You Xuan" outperforms both in terms of product quality control, logistics costs, and return services. The advantages demonstrated by the live-streaming sales and community-based supply chain collaboration model of "He Shi You Xuan" in various aspects make it more competitive in the younger market segment.

The use of cloud computing technology and infrastructure can strengthen e-commerce's electronic logistics, providing distributed computing resources for optimizing decisions. "He Shi You Xuan" faces the challenge of lacking comprehensive cost analysis and needs to integrate existing building blocks to understand critical cost items. Therefore, "He Shi You Xuan" can leverage cloud computing technology to use customized software applications, connecting the company with its partners' systems, and thereby improving customer order management and delivery within the supply chain business model.

Through supply chain collaboration mechanisms, various aspects of the supply chain, such as collaborative planning, inventory management, production planning, and logistics, achieve information sharing and synchronous operation. Through collaborative operations at each stage, the collaboration mechanism can help simplify the supply chain process in a community-based supply chain, reducing uncertainty in the supply chain process, lowering costs, and enhancing shared value.

4. Conclusion

In summary, "He Shi You Xuan's" live shopping and community-driven supply chain collaboration provide a new alternative to mainstream online shopping. It not only reduces logistics costs but also offers more personalized and humane return services. Compared to traditional brick-and-mortar stores, it expands the product selection range, enhances product diversity, and eliminates the time-consuming aspects of in-store shopping. The exceptionally high user stickiness of "He Shi You Xuan" is a key factor that enables its continuous operation and ongoing development within a relatively small user base.

As this model evolves and caters to a broader audience, especially the demands of younger consumers, there is the potential to expand the market for live shopping and community-driven supply chain collaboration. This expansion could bring new opportunities for businesses to reach different consumer groups.

"He Shi You Xuan" provides a new operating model for e-commerce enterprises to adapt to market changes. The flexible nature of the live-streaming sales and community-driven supply chain collaboration model enables businesses to quickly adapt to market changes and trends. In dynamic markets where consumer preferences and market conditions change rapidly, this adaptability is crucial.

The approach of live-streaming sales and community-driven supply chain collaboration also encourages the development of an interconnected ecosystem where suppliers, manufacturers, distributors, and consumers actively participate. This interconnectedness can foster the development of innovative solutions, partnerships, and business models within the supply chain ecosystem.

While this paper explores the feasibility of live-streaming sales and a community-based supply chain collaboration from aspects such as logistics, inventory management, and customer experience, it acknowledges limitations. The paper doesn't investigate the cooperation and partnerships between live-streaming platforms, retailers, and logistics companies, assessing how these collaborations impact supply chain dynamics and the success of live-streaming sales. It also lacks information about the visibility of the supply chain in such models. It is hoped that future research will complement these aspects.

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