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Supply Chain Management and Optimisation for Online Shopping Platforms

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Abstract: Online shopping has become an integral part of modern daily life and has made important contributions to the development of the retail industry. In China, it has made a great contribution to economic growth and progress. However, with the influx of more and more manufacturers into the market, the industry is becoming more and more competitive. As a result, some consumers have suffered the impact of inferior products, and this vicious competitive situation is not what the market wants to see. Not only that, the supply chain also faces many problems such as information asymmetry and inventory overhang. To change this situation, the management and optimization of the supply chain is crucial. This paper aims to deeply study the supply chain of online shopping platforms, analyze it from multiple dimensions, propose corresponding optimization strategies, and provide references for research and practice in related fields based on the publication standards of academic papers.

Keywords: business type, online shopping, supply chain, optimization design.

1. Introduction

As social life improves, people want more. China's online market has grown fast. In recent years, the Chinese market has changed a lot, including the number of users, the amount of money spent, and the market share. With the advancement of technology, online shopping platforms have developed rapidly. In the current situation, the supply chain of various vendors is mixed, and the lack of training and supervision of suppliers makes it difficult to improve their awareness of service quality. The partner screening mechanism has not yet been perfected, and it is difficult to solve the problem of selecting suppliers with supply capacity, good reputation, and quality assurance to help platform enterprises optimize their operations.

The online marketplace is divided into four types. B2B, B2C, C2C, and O2O. First, business-to-business (B2B). This market is mostly business-to-business, with platforms like Alibaba connecting suppliers from different industries. Some businesses also have their own B2B websites, like Haier. Business-to-business purchases are usually large orders.

Second, business-to-consumer(B2C). In this type of market, enterprise shops conduct transactions with individual users, such as the official flagship shop' on Amazon, Tmall and other platforms is this type of model. Manufacturers provide goods directly to individual consumers, and the order size is relatively small.

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Third, consumer-to-consumer(C2C). The representative platform for this type of marketplace is Taobao, where individuals can set up shops to conduct transactions. In addition, some second-hand trading platforms, such as Poshmark and Xianyu, also belong to this model.

Fourthly, online-to-offline(O2O). For the e-commerce industry, O2O is a kind of upgrading of B2C, which expands the scenarios for users to participate in offline consumption, and puts forward higher requirements for enterprises and sellers, such as 'the existence of offline entities and the integration of online and offline'. At present, there are already many enterprises in China to implement it, in addition, the emergence of new industry chains such as takeaway is also thanks to this. Therefore, in the complex and changing market environment, the stability of the supply chain has become the core element of the online shopping platform to enhance the competitiveness of the adjustment and optimization of logistics efficiency, reduce costs, improve customer satisfaction, and other aspects of the management and optimization of the vendors have become an urgent problem. Supply chain management can achieve the effect of each enterprise to take what they need, from the direction of their own better to start market expansion, and other enterprises in the same industry to play the role of advantages, to achieve the broadening of the new business, the development of new markets and new products to mine, to achieve the effect of mutual co-operation. And through the supply chain management can enhance the core competitiveness and risk response ability to enhance, so that the operation ability greatly improved [1].

The objective of this study is to examine the current state of supply chain management in the context of online shopping platforms to acquire a more accurate understanding of the issues that require attention. Through the detailed analysis of the existing problems and the exploration of optimization strategies, this paper puts forward targeted suggestions to effectively improve supply chain management. The first part of this paper will explore the development history of the supply chain. The second part of the paper will explore the optimization and improvement of the supply chain.

2. Overview of Supply Chain Management for Online Shopping Platforms

2.1. Overview of Supply Chain Management for Online Platforms

2.1.1. Definition of Supply Chain Management

Supply chain management is committed to building a network business model of close collaboration between enterprises, starting from the perspective of product demand, and jointly shaping a virtual supply chain system through deep integration and close cooperation between enterprises. This process ensures that corporate behavior closely aligns with market dynamics, forming a complete and efficient supply chain, and achieving overall optimization and collaboration of the supply chain [2].

2.1.2. Conceptual Division of Supply Chain Management for Online Shopping Platforms

The supply chain system is usually divided into two core parts: internal supply chain and external supply chain. Internal supply chain, as the name suggests, focuses on the core links of internal operations of enterprises. It constructs a supply and demand network closely connected by departments such as procurement, production, warehousing, and sales. Within this network, departments collaborate to ensure a smooth flow of products from raw material procurement to finished product sales.

Relatively speaking, external supply chains cross enterprise boundaries and expand their horizons to a broader external ecosystem. It covers multiple links such as raw material suppliers, manufacturers, storage and transportation service providers, retailers, and end consumers, forming a complex and vast supply and demand network. This network is not only large-scale but also involves numerous

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enterprise entities. Therefore, in achieving efficient coordination and resource optimization in various links, the external supply chain faces more severe challenges [3].

2.1.3. Main Characteristics of Supply Chain Management in Online Shopping Platforms

At present, the supply chain management of online shopping platforms has the following major characteristics. Firstly, the real-time sharing and system integration capabilities of online shopping platforms have laid a solid foundation for the smooth operation of various links within the supply chain, ensuring its optimization. During this process, all parties involved in the supply chain can collaborate more closely and jointly address market challenges. By building an efficient network platform, the flexibility and response speed of the supply chain have been improved, promoting rapid communication and cooperation among various links of the supply chain, ensuring keen insight and rapid response to market changes. This flexibility not only enhances the competitiveness of the enterprise but also improves customer satisfaction.

Secondly, online shopping platforms exhibit modern characteristics by actively utilizing advanced technologies, such as big data and artificial intelligence, to drive the intelligent and automated development of their supply chain. By deeply mining the value of data and optimizing resource allocation, they significantly improve the operational efficiency and decision-making accuracy of the supply chain. This intelligent transformation not only reduces operating costs but also creates more business value for enterprises.

Thirdly, online platforms also have transparency features. Online shopping platforms provide comprehensive supply visibility, allowing all parties involved to have a clear understanding of the operation of the supply chain and make more accurate and informed decisions. This transparent management approach enhances the reliability and stability of the supply chain, providing strong guarantees for the sustainable development of enterprises. Fourthly, online shopping platforms have cross-enterprise collaboration, and supply chain management is no longer limited to activities within a single enterprise, but emphasizes close collaboration and coordination between enterprises (such as suppliers, manufacturers, distributors, retailers, etc.). This cross-enterprise collaboration is an important part of achieving overall efficiency and competitive advantage in the supply chain [4].

2.2. Composition of Supply Chain for Online Shopping Platforms

Centered around the core enterprise, the supply chain functions as a network structure model, orchestrating the flows of information, logistics, and capital, from raw material procurement to the production of intermediate and final products, and ultimately delivering these products to consumers via the sales network. It connects suppliers, manufacturers, distributors, retailers, and end users as a whole.

Logistics mode: from supplier → manufacturer → distributor → onlineshopping platform warehouse → consumer

(Flow content: warehousing, transportation, distribution, and other links)

Capital flow: from consumers → online shopping platforms → distributors →manufacturers → suppliers (reverse payment)

(Flow content: The payment made by consumers flows through the platform to distributors, manufacturers, and suppliers, and then the transaction settlement is completed)

2.3. The Role of Supply Chain Management in Online Shopping Platforms

The supply chain management of online shopping platforms plays a crucial role in improving operational efficiency. Firstly, the platform can significantly reduce the occurrence of excess inventory and stockouts by implementing precise inventory forecasting strategies and supplementing

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them with real-time inventory monitoring. This refined management enables faster capital turnover and ensures smooth and efficient operational processes. In this process, the online platform, as the leader, continuously optimizes resource utilization, directly promoting the improvement of operational efficiency.

For logistics, improving its efficiency is an indispensable part of supply chain management in online shopping platforms. The platform actively establishes close cooperative relationships with logistics companies and jointly adopts advanced logistics management systems. Thus achieving rapid processing of orders, real-time tracking of packages, and intelligent delivery services. Effectively shortening delivery time has greatly improved customer satisfaction while injecting new impetus into the platform's operational efficiency and market competitiveness.

Secondly, strengthening supplier collaboration is an important guarantee for the stable operation of online shopping platforms. The platform is committed to establishing long-term and close cooperative relationships with suppliers, through which both parties can achieve timely information sharing and collaborative operations. This collaboration not only ensures the stability of product quality and the continuity of supply but also greatly reduces operational risks caused by supply chain disruptions. As the core of this collaborative mechanism, the supply chain provides solid support for the sustainable and healthy development of the platform, while also demonstrating its unique value in improving customer satisfaction. The platform fully utilizes big data and artificial intelligence technology to conduct an in-depth analysis of consumer purchasing behavior and trends. This insight can accurately predict the market demand, to adjust the inventory structure in advance to better meet the diversified needs of consumers. At the same time, an efficient supply chain management system ensures rapid processing and delivery of orders, allowing consumers to receive their desired products faster. These efforts undoubtedly further enhance customers' shopping satisfaction and loyalty.

Finally, from the perspective of cost control, the optimization of supply chain management has also brought significant economic benefits to online shopping platforms. By implementing refined inventory management and real-time monitoring strategies, the platform can effectively avoid the problems of capital occupation and loss caused by excessive inventory. At the same time,

this optimization also reduces missed sales opportunities due to stock shortages, thereby improving the efficiency of capital utilization. These cost control measures have laid a solid financial foundation for the long-term development of the platform, enabling it to maintain a stable financial position in the fierce market competition.

3. Supply Chain Optimization Analysis

3.1. Digitization and Informatization

The ongoing evolution of network information has given rise to the advent of novel contemporary management techniques, which have significantly impacted the domain of supply chain management. Currently, advanced technologies such as big data, cloud computing, and the Internet of Things have been widely used in all aspects of market operations, significantly promoting the informatization process of supply chain management. Taking the cold chain food supply chain as an example, the introduction of digital management has enabled the monitoring of key parameters in the food transport process, thus ensuring its authenticity and transparency. Artificial intelligence algorithms can budget for the freshness of cold-chain food, allowing companies to make timely deliveries of supplies. In this digital cold chain supply chain, the transport time is reduced by over 30% and the food loss rate is decreased by over 20% in comparison to previous methods. Furthermore, the use of big data analytics allows companies to anticipate future demand and rationalize the allocation of supply.

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As digitization deepens, enhanced data-driven decision-making is the future trend. Online shopping platforms can use big data and artificial intelligence technologies to accurately predict and efficiently manage the supply chain [5].

3.2. Inventory and Logistics Optimization

Inventory and logistics optimization can solve a range of problems such as over-stacking and ineffective distribution in the business. First of all, the use of big data and artificial intelligence technology can accurately predict and intelligently replenish stocks, avoiding inventory backlogs or stock-outs by analyzing and analyzing information about users' behaviors, shopping habits, and changes in preferences. Real-time monitoring and strategy adjustment online shopping platforms can guide supply chain strategy development through real-time monitoring of sales data, such as adjusting purchasing plans, optimizing product structure, or improving logistics and distribution paths. In addition, computer technology allows for-profit contribution to be used as a criterion to categorize goods to gain more revenue [6].

Secondly, establish a close supply chain partnership, and establish long-term cooperation with suppliers to ensure quality assurance and stability in the supply chain. Establish cooperation and information-sharing mechanisms among suppliers, producers, and logistics providers to make information more transparent while gaining a greater competitive advantage, and to jointly cope with market fluctuations and reduce response time.

What's more, the introduction of advanced supply chain management techniques plays a pivotal role in optimization. For example, ERP (Enterprise Resource Planning) and SCM (Supply Chain Management) systems, in conjunction with a Warehouse Management System (WMS), can facilitate real-time monitoring of inventory status, automated picking, and accurate order management. This enables the reduction of human error and improvement in the accuracy and speed of warehouse operations, with the ultimate goal of enhancing the efficiency of collaboration between the various links in the supply chain and ensuring the smooth operation of the entire chain [7,8]

The implementation of distributed warehousing strategies can serve to reduce logistics distances, thereby improving delivery speed. Furthermore, the combination of technology and intelligent logistics solutions can facilitate the optimization of inventory allocation, while the introduction of local delivery can help to reduce logistics costs and enhance the user experience. This, in turn, can alleviate inventory pressure. Finally, the flexibility to respond to changes in market demand and the establishment of a rapid response mechanism is essential for every enterprise. For example, diversified supply channels can prevent the supply chain from breaking down due to unexpected problems with a single supplier.

4. Conclusion

In the context of the rapid development of information, supply chain management has become an important element of platform development. It is related to whether the platform and merchants can successfully stand in the competitive environment. In that case, the optimization strategy of supply chain management plays a key role in increasing competitiveness, reducing costs, and improving customer satisfaction. Because of the situation, this paper puts forward a few suggestions.

First, to enhance the transparency and traceability of the supply chain. Shopping platforms can introduce blockchain technology into supply chain management, especially in terms of commodity traceability and logistics tracking. Through the immutability of blockchain and distributed characteristics, consumers can clearly understand the origin, production process, and logistics trajectory of goods, thus increasing trust. At the same time, it also helps platforms identify and deal with potential problems in the supply chain promptly.

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Second, to strengthen customers' experience and service innovation. Shopping platforms can continue to optimize customers' experience and provide users with personalized and convenient shopping services. For example, shopping platforms can use AI technology to provide personalized recommendations for customers. And it can analyze consumer behavior through big data to provide users with a customized product and services. At the same time, various links in the supply chain are encouraged to innovate, such as developing new products and optimizing service processes, aiming to meet the changing needs of consumers.

In addition, technological management is driving a disruptive change in the traditional supply chain management model. The supply chain management of online shopping platforms will deeply integrate technological innovation and the concept of sustainable development. Big data and AI technology will profoundly penetrate every link of the supply chain, from intelligent prediction of market demand, and dynamic adjustment of inventory strategy, to accurate planning of logistics paths, to achieve optimal allocation and efficient use of resources.

At the same time, the green supply chain will become an industry consensus, promoting environmentally friendly packaging, energy saving, emission reduction, and waste recycling to provide consumers with a greener and healthier shopping experience. In addition, personalized and customized services will become an important direction of supply chain upgrading, through the depth of consumer data mining, accurate delivery of personalized goods and services, enhance users' stickiness, and co-shape a new ecosystem for online shopping.

Authors Contribution

All the authors contributed equally and their names were listed in alphabetical order.

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