Research on Supply Chain Integration and Optimization of Live E-commerce

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Abstract: In recent years, with the rise of short video platforms and e-commerce platforms, live streaming with goods has become a hot online sales model. However, the sales volume of live broadcast by big anchors is tens of thousands, which is actually supported by a complete supply chain system. By studying the mode and current situation of the supply chain of live broadcast e-commerce, and analyzing the existing problems, suggestions on the integration and optimization of the supply chain of live broadcast e-commerce are put forward, so as to provide references for relevant personnel in this industry.

1. Introduction

The COVID-19 in early 2020 made many physical stores unable to open, while live delivery broke through this space limit and provided online channels for the sale of many products. Now fast hand, shake sound, as well as Taobao live broadcast and other platforms, can be linked to the live broadcast room, through the anchorman of the trial and explanation of goods, increase people's desire to buy, so as to achieve the purpose of sales. Live delivery supply chain is essentially e-commerce supply chain, but more challenging than traditional e-commerce supply chain. The real threshold and core competitiveness of live delivery is not anchorman flow or platform, but to find high quality manufacturers and sources of goods, and to compete with the ability of supply chain. Through figure 1, we can see that the scale of live e-commerce is increasing rapidly, there is still a lot of room for development.

Fig. 1 China Live e-commerce transaction volume and year-on-year growth rate

Transaction volume and year-on-year growth of live-streaming e-commerce in China

Trading volume (100 million YUAN) , Year-on-year growth rate (%)
Lindsey-Mullikin and Borin(2017) believe that many companies spend a lot of time and energy on social media to attract potential consumers. In order to improve consumer awareness and promotion of its brand. Once the consumer decides to buy the product, it can sell products directly on social platforms such as Facebook and Instagram. The survey found that although customers may not think much about the quality of their products when buying them on social media, sales of products will increase significantly due to the convenience of buying[1]. N.Kim and W.Kim(2018) through a survey of well-known social networking sites such as Face book and Twitter, it is found that sharing and recommending products through social platforms can increase the sales volume of goods[2]. Campbell and Farrell(2020) describe the nature of live delivery and the type of anchor, Three components of live delivery were identified: consumers, anchors and social media managers, Pointing out that with the booming live broadcast industry, A large number of anchors and brands will pour into the live broadcast market, Marketing managers should improve their company's overall marketing strategy[3].

2. Supply Chain Model and Current Situation of Live E-commerce

At present, many live e-commerce companies use anchors, MCN institutions and businesses composed of closed-loop ecological chain network. According to the direct e-commerce supply chain model analyzed above, the supply chain model can be divided into internal supply chain and external supply chain according to the structure of the enterprise.

![Live Closed-loop Ecological Network](image)

**Fig. 2 Live Closed-loop Ecological Network**

2.1. Live ecommerce supply chain model

(1) Brand Collection Model

**Feature:** Supply chain through cooperation with offline counter brand, set up their own live base, invite anchors to sell goods, the style is mainly old.

**Advantage:** All inventory is borne by the brand, the supply chain is only a middleman to earn the difference, there is not much inventory risk.

**Disadvantage:** The supply chain itself does not produce goods, does not do e-commerce operations, does not hatch anchors, revenue is difficult to stabilize, and does not have its own core competitiveness.

(2) Brand Channel Model

**Feature:** Brands regularly develop new models to invite external anchors or send samples to cooperate.

**Advantage:** New style, accurate marketing, high conversion rate, profit controlled by brand.

**Disadvantage:** Due to the long development cycle of brands, the number of styles is not updated much.

(3) Wholesale Model

**Feature:** Wholesale Market and Anchor Cooperation.

**Advantage:** The style updates fast, the performance price is high, the price is moderate.

**Disadvantage:** Management is difficult, lack of characteristics, after-sale more difficult to ensure.
(4) Leftover Stock Combine Model  
Feature: Anchorman works with leftover stock supplier to help sell inventory.  
Advantage: The price is low, the style is many, the sales volume is big, the number of fans grows fast.  
Disadvantage: The design is relatively old, and easy to break the code out of stock.  
(5) Self-produced Self-sold Model  
Feature: The anchorman has his own factory and sells his own products.  
Advantage: The style updates quickly, reduces the intermediate link, the profit is relatively high.  
Disadvantage: The product category is too single.

2.2. Current status of live ecommerce supply chain  
(1) Internal supply chain  
Internal supply chain refers to the supply and demand network of each region involved in the production and circulation of internal products. For example, brand live broadcast base and some self-produced manufacturers.

![Internal Supply Chain Diagram](image)

(2) External supply chain  
External supply chain refers to the supply and demand network composed of suppliers, supply chain parties, warehouse storage parties, logistics companies and final consumers involved in the production and circulation of products related to the enterprise. Most live ecommerce still depends on external supply chains.

![External Supply Chain Diagram](image)

3. Challenges to the Live E-commerce Supply Chain  
"Live with goods" for businesses to sell goods to provide a new model, brought more opportunities. But live selling is just a solution to the problem of product sales. In the whole supply chain system, production or selection, warehousing, sorting, packaging, distribution, after-sale and a series of links. Because many live broadcast bases or individual anchors are not mature enough in the supply chain, capital losses or even closure. Some problems in the supply, quality and logistics of live delivery bring severe challenges to the management of supply chain.
(1) Product quality is not effectively guaranteed
The main categories of live delivery are clothing home textile, beauty care, food and so on. The rise of live e-commerce also makes a lot of "white brand products" into the market. In order to pursue the interests, some anchors cooperate with some manufacturers who produce "three no products" and sell them to consumers, which makes the quality of the products bought very poor and even unusable. For some fresh products, in the process of processing, storage, transportation, can not control the quality, there will be food deterioration problems. Therefore, how to ensure the quality of live sales products is the most critical issue.

(2) Diversification of demand leads to short product life cycles
In the live e-commerce mode, anchors need to update product styles frequently to attract more traffic and customers, especially in the clothing industry, resulting in a short product life cycle, which will force suppliers to speed up the development of products. Shortening the product life cycle to the factory response speed, product iteration speed has brought challenges.

(3) Uncertainty of demand challenges to supply chain capacity
Because of the uncertainty of the number and age of the groups watching live broadcast, some products are easy to become popular style sales surge, and this increment is uncertain, some products may not sell well. This will lead to two problems: on the one hand, the sharp increase in commodity sales makes the supply unable to meet the demand for orders; on the other hand, if suppliers prepare goods in advance, there may be unsalable products and bring great pressure. Therefore, the supply chain needs to have the ability to deal with the large fluctuation of demand at any time, and be ready in the production, warehousing, logistics and other links of commodities. To solve the problem of supply and demand balance, it is a challenge for live e-commerce supply chain.

(4) Challenges to warehouse management arising from all-channel sales and popular styles
Full channel sales refers to the sales behavior that enterprises adopt as many sales channel types as possible to integrate and combine. For suppliers, full channel sales are higher than traditional single channel sales. Coupled with a sharp increase in sales of popular style products, warehouse management difficulties and inventory costs will increase. The whole supply chain should keep focused and fast in the process of controlling cost, put forward higher skill requirements for warehouse manager, have innovative thinking ability and leadership ability to exert employee ability. At the same time, new measures to improve the efficiency of warehouse management, such as new management techniques and tools, need to be found. This poses new challenges to inventory managers and inventory management methods.

4. Supply Chain Integration and Optimization of Live E-commerce

4.1. Integration of supply chains
Supply chain integration is important for some obscure anchors or small suppliers. Supply chain service providers or e-commerce platforms can help anchors and merchants to do a good job of docking by and organizing selection meetings, and integrate high-quality supply chain resources to form a closed-loop and integrated supply chain system. In addition, supply chain service providers need to integrate information flow, capital flow, business flow and logistics to achieve mutual benefit and win-win situation for merchants, consumers and e-commerce platforms.
4.2. Supply chain optimization

(1) Shortening the supply chain by selecting the location and source of the live broadcast base

For e-commerce direct supply chain, shortening supply chain can make goods price lower and logistics faster. At present, most of the live broadcast bases are in Hangzhou and Guangzhou, these two local factories are more, close to the commodity supply chain, so it is convenient for the anchorman to choose products and visit factories, etc. Secondly, the choice of supply, for some small anchors, there is no ability to contact the direct supply of manufacturers, can not give consumers relatively low price products, there will be the same goods different anchorman prices vary greatly, Therefore, we should choose a source of goods to shorten the supply chain. As shown below, there are only two links in the whole supply chain, which can reduce the bullwhip effect brought by the circulation link in the middle of traditional sales and feedback the real demand to the merchant in time.

(2) Flexible production methods to improve supply chain elasticity

The sales model of "many styles, new and fast, no sales plan" requires the supply chain to be able to respond quickly and be flexible, and to adjust the supply strategy in time according to the demand of the live broadcast market. For production systems, flexibility refers to the ability of production systems to adapt to changes, to adapt quickly to changes in market demand, to eliminate unnecessary losses, to achieve on-demand production, and to enhance the flexibility and adaptability of enterprises. Make the enterprise obtain the maximum benefit. There are many ways of flexible production. In view of the unpredictable sales mode of live e-commerce demand, suppliers can adopt push-pull production mode. For example, the production of raw materials adopts push type to increase the scale effect of the product. The product assembly link adopts pull type, which is driven by demand, and adjusts the product type at any time according to the market demand. This flexible mode of production can enhance the elasticity of the supply chain.
Fig. 7 Flexible modes of production

(3) Application of technologies such as digitization to enhance supply chain agility.

The whole supply chain process can be tracked and analyzed by combining with the Internet, using digital, visual, artificial intelligence and other technologies. From the production link to the distribution link, every information flow, logistics and capital flow involved in the process can be quickly and accurately reflected by big data. Construct perfect logistics network and big data and intelligent logistics facilities to meet the timeliness requirements of consumers for logistics distribution. In addition, the flow of goods is driven by "order prediction", through the analysis of consumer big data to predict the consumption demand of each live broadcast, put the goods into the front warehouse before the live broadcast, and use storage system and intelligent logistics facilities. Tools such as drones and driverless cars to improve the efficiency of goods distribution. Plan, coordinate and control logistics, information flow and capital flow through digital management to improve the agility of live supply chain.

(4) Ensuring integrated services in the back-end supply chain

The back-end supply chain includes warehousing, logistics and cash flow. For the more mature supply chain live base, the back-end supply chain must be guaranteed. First of all, warehousing, large supply chain bases generally have product inventory safety control mechanism to ensure the rational use of warehouses, not because of the shortage of explosive products resulting in delivery lag problem, Warehouse layout planning should also be optimized to improve delivery speed. The second is logistics, to cooperate with fixed express delivery companies, according to the daily volume of goods signed a good contract, to greatly reduce logistics costs, can also become a major advantage of live e-commerce. For fresh industry, we should build cold storage and cooperate with cold chain transportation company to improve the price advantage of express delivery. The third is cash flow, affected by the epidemic situation, many factory commodity backlog, capital turnover is difficult, which requires a certain amount of reserve funds for turnover, or cooperate with various investors to optimize the capital allocation of enterprises, In order to ensure the normal operation of supply chain links such as procurement, production, logistics and so on. In the face of different customer needs, we should provide comprehensive services, including the return and exchange of goods, optimize customer service and reverse logistics services.

5 Conclusion

For many live broadcast platforms, there is no supply chain system construction capacity. But better e-commerce platform, are actively looking for quality supply chain resources, committed to build their own supply chain. At the same time, the development of e-commerce is becoming more and more digital, providing more convenience and speed for our life. The following research can be carried out from the construction of direct broadcast e-commerce supply chain system, or to study the supply chain problems of emerging community group, group purchase and other e-commerce models.

Reference

[1] Lindsey-Mullikin, J., Borin, N. (2017) Why strategy is key for successful social media sales. J. Business Horizons., 60(4): 473-482.
[2] Kim, N., Kim, W. (2018) Do your social media lead you to make social deal purchases? Consumer-generated social referrals for sales via social commerce. J. International
[3] Campbell, C., Farrell, J.R. (2020) More than meets the eye: The functional components underlying influencer marketing. J. Business Horizons., 63(4):469-479.

Journal of Information Management., 39:38-48.