

Research on Cross-Border E-Commerce Supply Chain Risk Management and Countermeasures -- Taking TikTok As an Example

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Abstract: With the rapid development of globalization and the Internet, cross-border e-commerce has become an important form of international trade, possessing significant growth potential. However, its supply chain is relatively complex and faces numerous risks, including delivery issues, policy changes, and warehouse management challenges. Although existing research has focused on the identification and management of supply chain risks, in-depth analyses of specific enterprises, such as TikTok Shop, remain limited. This study takes TikTok Shop as a case to explore risk management and response strategies within its cross-border e-commerce supply chain. Through literature review, SWOT analysis, and other methodologies, the main risks and their underlying causes encountered in TikTok Shop's supply chain operations are systematically analyzed. The research finds that TikTok Shop primarily faces issues of unstable logistics, changes in international policies, and inadequate warehouse management. In response to these risks, this paper proposes strategies such as establishing corresponding risk response mechanisms and optimizing the warehouse system, aiming to enhance the stability and competitiveness of the supply chain. These findings provide strategic insights and references for cross-border e-commerce enterprises.

Keywords: Cross-border E-commerce, Supply Chain Risk Management, TikTok Shop, SWOT Analysis, Response Strategies.

1. Introduction

With the continuous acceleration of globalization and the rapid development of Internet technology, cross-border e-commerce has become one of the important forms of international trade, demonstrating significant growth potential. However, the complexity and diversity of cross-border e-commerce supply chains also bring numerous risks, such as delivery issues, international policy changes, and warehousing risks. Although there has been considerable research on the identification and management strategies of cross-border e-commerce supply chain risks, including financial risks in cross-border e-commerce supply chains and platform risks in cross-border e-commerce [1], much of it focuses on risk classification and assessment. In-depth studies on specific enterprise cases remain

relatively scarce, especially in the context of cross-border e-commerce platforms like TikTok Shop, where supply chain risk management research is still insufficient [2].

Therefore, this paper aims to fill this research gap by thoroughly exploring the risk management and response strategies of TikTok Shop within its cross-border e-commerce supply chain. This research not only holds significant theoretical value but also has substantial practical application significance. As TikTok Shop rapidly expands in the global market, the stability and risk management capabilities of its supply chain directly affect the company's sustainable development and competitiveness. By systematically studying TikTok Shop's supply chain risk management model, this research can provide reference strategies for other cross-border e-commerce enterprises, promoting the healthy development of related industries. Additionally, this study will enrich the theoretical framework of cross-border e-commerce supply chain risk management and expand related research areas.

This paper focuses on the supply chain risks of TikTok Shop in cross-border e-commerce, including the identification of major risk factors, analysis of the causes of these risks, and assessment of their impact on business operations. Based on this, the paper proposes corresponding management and response strategies. The research methodology adopts a mixed-methods approach: first, conducting a systematic literature review to organize and summarize the theoretical foundations and current research status of cross-border e-commerce supply chain risk management domestically and internationally; second, employing SWOT analysis to conduct an in-depth examination of TikTok Shop's supply chain operations, revealing the specific risks it faces in actual operations and proposing response measures based on the actual situation; and finally, verifying and optimizing the proposed strategies to ensure their practical value.

The research aims to comprehensively identify the main risks in TikTok Shop's cross-border e-commerce supply chain, systematically analyze the causes and sources of these risks and their impact on business operations, and subsequently propose practical risk management and response strategies. Through an in-depth analysis of the TikTok Shop case, this paper seeks to uncover the successes and shortcomings of its supply chain risk management, provide practical strategic references for other cross-border e-commerce enterprises, and enrich the theoretical research on cross-border e-commerce supply chain risk management.

2. Problem Analysis

2.1. Risk Analysis of Supply Chain Policies and Laws

The U.S. policy restrictions on TikTok shops to some extent stem from the "TikTok shop threat theory" at the end of President Trump's term, which has forcibly raised the issue to the level of national risk. After Biden came to power, he took the concept of "small courtyard and high wall" as the guiding strategy of American science and technology competition, while TikTok shop was regarded by the United States as a tool for science and technology competition because it could carry content information and obtain data. For this reason, TikTok shop was systematically suppressed by the U.S. government. It can be seen that the United States' policy crackdown on TikTok shops is highly exclusive and targeted, and its purpose is to gain an advantage in the competition with China.

Compared with the executive branch, the legislative body of the United States takes a more radical and proactive attitude towards restricting TikTok shops. On the one hand, as for the cross-border data flow brought by TikTok shop, both the US Senate and house of Representatives agreed to specify and refine the means of restriction in order to aim at the rapid development of TikTok shop in the United States. On the other hand, the rapid development of TikTok shops also poses challenges to the U.S. e-commerce industry. As the second largest e-commerce market in the world, the U.S. online retail

market is dominated by Amazon, a leading enterprise, but its concentration is low, resulting in sufficient development space for new e-commerce platforms, especially Tiktok shops.

Amz123 survey data shows that by the end of June 2023, more than 70% of Amazon sellers' sales in China had decreased compared with the same period in 2022, and the number of sellers' orders of 26.7% had even decreased by 30%~50%. Amazon's "dominance" in the U.S. e-commerce market is undoubtedly being challenged by the new e-commerce platform represented by tiktok shop.[3] Obviously, through a series of targeted bills, the U.S. government further reduced the time for TikTok shops to make a choice, forced it to sell shares or completely withdraw from the U.S. market, and protected the commercial interests of local e-commerce enterprises, reflecting the characteristics of trade protectionism.

2.2. Risk Analysis of Supply Chain Distribution

In the cross-border e-commerce supply chain of TikTok shop, distribution is the most important sector. For this sector, TikTok shop has optimized the distribution network, simplified the distribution process, and improved the quality of distribution service. But in this kind of overseas distribution, there is a big test for its distribution security, distribution cost control and distribution service. Some goods are prone to transportation delays, warehouse damage and other problems during transportation. When carrying out distribution activities, different distribution service quality will lead to differences in the shopping experience of users. And there will likely be order processing errors, package loss and other situations. Due to the transnational distribution, problems such as the improvement of distribution cost and poor distribution efficiency caused by the imperfect distribution network coverage in some regions are still obvious. At the same time, the characteristics of transnational distribution lead to a substantial extension of the transportation time of goods compared with domestic distribution [4]. These problems are determined by the characteristics of cross-border e-commerce. The extensive logistics hub and logistics network set up by the TikTok shop have also brought new challenges to distribution. As a cross-border e-commerce platform, TikTok shop must face this long-term problem with a prudent attitude and effective solutions.

2.3. Risk Analysis of Supply Chain Warehousing

TikTok shop has established an overseas warehouse consignment mode to facilitate transportation. However, as TikTok shop is a cross-border e-commerce, many goods are sourced in China, so the storage is vulnerable to unstable factors, resulting in imperfect storage management and increased storage costs. The management and operation of overseas warehouses need high-quality professionals, but there is still room for improvement in personnel quality, which will also have an adverse impact on the service quality and efficiency of overseas warehouses, leading to a decline in consumer experience. The market environment in different countries and regions is different, leading to different restrictions and demands for overseas warehouses. Imperfect management of overseas warehouses is likely to affect sales and customer satisfaction. Moreover, unstable inventory can also easily cause excessive inventory, which leads to overstock of goods and occupation of working capital. In addition, if the goods returned to the overseas warehouse have accidents, the general result is to destroy them at the location of the overseas warehouse, which requires an effective recycling and reuse mechanism [5]. For more reason, some scholars have found that improving the logistics service level of overseas warehouses can improve the order conversion rate, attract more consumers to buy, and thus improve sales [6]. These measures can help the overall efficiency and stability of the supply chain.

3. Research Method

For this study, this article first uses the SWOT model to conduct a comprehensive analysis. The SWOT model is a strategic analysis tool. Assist in identifying the internal and external environmental factors of research by analyzing their Strengths, Weakness, Opportunities and Threats. Thus supporting decision making.

The article study through the analysis of Strengths and Opportunities in the model, finds that TikTok shop has advantages such as a large user base, technological support, high market demand and low cost. And the continuous deepening of cooperation with relevant logistics operators also provides an important guarantee for its development. Study through the analysis of Weaknesses and Threats in the model, find that TikTok shop has problems such as competition pressure, uneven service quality, logistics and distribution cycle is long, difficulty to return and so on.

Through the analytic hierarchy process (AHP) and judgment matrix, this paper finally identifies those important risk problems and puts forward corresponding suggestions.

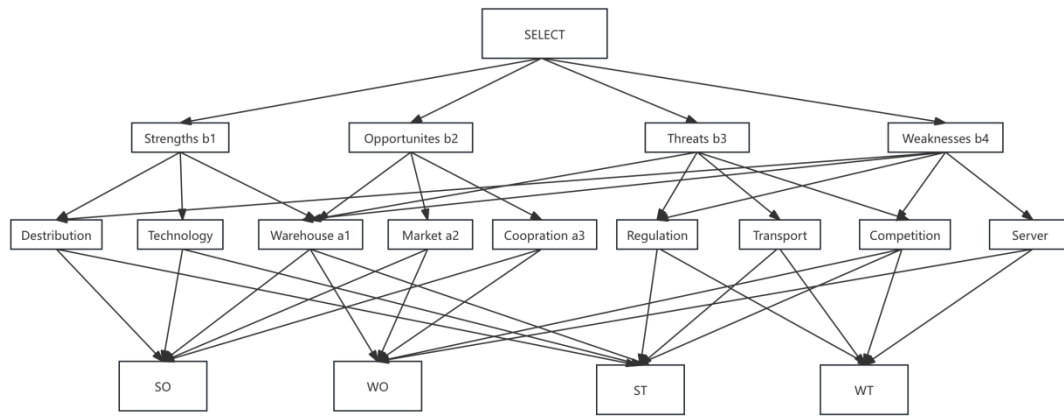


Figure 1: Strategy choice hierarchy analysis diagram. (Picture credit: Original).

Through the SWOT analysis of the TikTok shop, the analytic hierarchy process is applied to construct the judgment matrix. On the basis of the importance assignment, the Consistency Ratio (CR) is obtained. If $CR > 0.1$, the judgment matrix is not acceptable; if $CR < 0.1$, the judgment matrix is acceptable. The calculation process is shown as Equation (1), Equation (2) and Equation (3). Where A represents the judgment matrix, ω represents the weight vector, and n is the order of the matrix.

$$\lambda_{\max} = \sum_{i=1}^n \frac{[A\omega]_i}{n\omega_i} \quad (1)$$

$$CI = \frac{(\lambda_{\max} - n)}{n - 1} \quad (2)$$

$$CR = \frac{CI}{RI} \quad (3)$$

According to the formula, five models are constructed, namely the SWOT model WO, SO, ST and WT model. Here, the SWOT WO model is taken as an example to calculate CR.

Table 1: SWOT model.

G	b1	b2	b3	b4	mi		w(c)	aw	$\lambda_{\max}$	CR
b1	1	2	2	4	16	2.000	0.426530177	1.786734911	4.02253217	0.084
b2	1/2	1	1	2	1	1.000	0.213265089	0.893367456		
b3	1/2	1	1	2	1	1.000	0.213265089	0.893367456		
b4	1/4	1/2	1/2	1	0.0625	0.500	0.106632544	0.446683728		

Table 2: WO model.

c	a1	a2	a3	mi		p(a)	aw	$\lambda_{\max}$	CR
a1	1	2	4	8	1.682	0.513274336	1.849862679	3.060700543	0.057
a2	1/2	1	2	1	1	0.305157156	0.92493134		
a3	1/4	1/2	1	1/8	0.595	0.181568508	0.4624656		

According to the calculation (Table1, Table2), the CR of the SWOT model is 0.084, the CR of the WO model is 0.037 (SO), 0.041 (ST), 0.058 (WO), 0.071 (WT), and $CR \leq 0.1$ is the consistency test. It can be seen that the consistency of the judgment matrix is good and the reliability of the model construction is guaranteed. However, in the process of research, the existing risks such as legal risks, supply chain transportation risks and supply chain warehouse risks are also found. Based on the analysis results, the following targeted improvement suggestions are put forward.

4. Risk avoidance strategy

4.1. Supply chain legal risk advice

For the legal and policy threats to TikTok shops adopted by the United States and other countries in order to protect local e-commerce platforms, TikTok shop has also quickly adjusted its policies in a short time.

In 2024, TikTok shop announced the cooperation with Amazon and opened up two paths. One is "full closed loop", that is, TikTok shop, all transactions are completed in the TikTok shop; The second is the "semi-closed loop", that is, the "yellow car" external chain is added, and the transaction is diverted to an independent station. This measure makes up for Tiktok shop's shortcomings in the supply chain.[7]

Therefore, in view of the above risk problems, TikTok shop can adopt the way of cooperation and alliance, and form an alliance with other cross-border e-commerce enterprises to jointly deal with the challenges. Of course, the most important thing is to establish a diversified market, reduce the market dependence on some regions with strict policies, and continuously explore regional markets such as Southeast Asia, South Asia and West Asia to ensure that it has a stable survival market.

4.2. Supply chain transportation risk advice

In the cross-border e-commerce supply chain, transportation is a very important link. It is very necessary to reduce the cost and increase the efficiency of logistics links. The most important risk point is his return and exchange. The traditional return and exchange mode is cost-effective and low, which will greatly reduce consumer satisfaction [8].

TikTok shops should be optimized for returns and exchanges. To solve these problems, the return process should be simplified and detailed return service policies should be provided. Secondly, establish a return time window to let consumers understand the timeliness of returns.

Finally, cooperate with logistics service providers to expand the scope of service and establish multiple distribution stations to reduce the distance and time of distribution. Optimize carrier service quality, provide real-time order information, regularly evaluate the performance of service quality, and adjust it according to the results. Of course, a more critical point is to check the quality of some goods, ensure that the quality is up to standard, and control the return and exchange problem from the source. Continuous optimization and improvement to enhance its competitiveness in the e-commerce market. These measures can be helpful to the overall efficiency and stability of the supply chain.

4.3. Supply chain warehouse risk analysis suggestions

Scholars have found that improving the logistics service level of overseas warehouses can bring profit growth to cross-border e-commerce supply chains [4]. Tiktok shop overseas warehouse one-piece delivery mode reduces a lot of trouble for Tiktok shop, but there are still some problems in the management of overseas warehouses.

The budget of goods demand is a more important part, which needs to optimize the enterprise resource planning part of the warehouse management system and update the inventory, order and logistics information in real time. In this way, the relevant demand can be predicted in time to reduce inventory overhang or inventory shortage. Similarly, intelligent warehouse management systems need to be introduced, using artificial intelligence, AI and automation to reduce human error. And it can implement multi-channel inventory management to ensure that the multi-platform data is updated synchronously when cooperating with other logistics providers. For the supply of goods, in the face of the potential risk of supply chain disruption, multiple suppliers can be found to reduce the dependence on a single supplier and maintain a certain safety inventory for emergencies. These measures can be helpful to the overall efficiency and stability of the supply chain.

4.4. Other suggestions

TikTok shops can increase user engagement to cope with market competition. Through continuous optimization of product content and service quality to increase user stickiness, attract and retain users.

Cooperate with local logistics companies to ensure that their marketing and distribution comply with local laws and regulations to reduce the inconvenience caused by policies and regulations.

Enhance user trust, build brand reputation and quality services, in order to improve its market competitiveness, can minimize the risk caused by the competitive pressure of local enterprises. Increase product diversification and develop more exclusive supply products with suppliers in order to enhance its market competitiveness and reduce direct competition with other enterprises.

5. Conclusion

Through research and analysis, it can be found that there are certain problems in the cross-border e-commerce supply chain of TikTok shops, including laws, policies, transportation and warehousing. In response to these problems, the TikTok Shop management team has taken a series of optimization measures and achieved certain results in reducing costs and improving efficiency. However, there are still some challenges that have not been fully addressed.

To solve these problems, this paper suggests establishing a logistics cooperation alliance and developing a diversified market; Simplifying the return process, expanding the logistics network, and strengthening compliance management; Introducing and updating advanced logistics management systems and methods, optimize supplier management and other measures.

This paper hopes to make some suggestions on the supply chain of TikTok shop shops through research on this topic and also hopes to provide some help for the optimization of the supply chain management of cross-border e-commerce.

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

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