Exploring the Influence of TikTok's Global Expansion on the Evolution of Digital Supply Chains Worldwide

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Abstract:

The rapid development of global digital supply chains is affecting the supply chain systems of platform companies. As the world's most popular short video platform, TikTok has shown unique characteristics in its digital supply chain transformation during its international expansion. This study explores how TikTok reconstructs its supply chain by Content generation and distribution, localized data management, regulatory compliance, and feedback mechanisms. The study systematically explores the dynamic operation of TikTok by combining literature review, case analysis and model construction. The results show that TikTok has built an efficient operation system by combining advanced digital supply chain management with flexible localization strategies and compliance practices.

Keywords: TikTok, Digital Supply Chain, Platform Economy, Globalization

1. INTRODUCTION

According to the development of globalization, supply chain management is currently undergoing a revolution and the digital supply chain and platform economy are expanding globally [1]. TikTok is the most representative and influential platform. Tiktok has developed a unique short video style and also provides online shopping functions, which has changed the consumption habits of users. Meanwhile, TikTok has promoted the development of cross-border video production, data collection and logistics management systems, this is a complete digital supply chain system. In contrast, the existing global research on TikTok focuses more on software algorithms and marketing strategies, and lacks research on how to manage digital supply chains across borders. Therefore, although TikTok's influence in the process of globalization is becoming increasingly significant, there are still obvious blind spots in the research of its technology and operation system, which need further exploration. This study is based on this missing part and is carried out through literature research and case analysis. Focus on the framework of TikTok's digital supply chain system and analyze its various aspects, including cross-border marketing and management strategies, technology and data.

2. LITERATURE REVIEW

2.1 Digital Supply Chain and Platform Economy Enterprises

The traditional supply chain is built on the order of each link of the supply chain, physical processes include procurement, manufacturing, distribution and retail etc. These links are not only carried out independently, but also rely more on static information systems, so the traditional supply chain is less efficient [1]. The digital supply chain unites the entire supply chain through real-time data and platforms. The communication and connection of electronic information make the supply chain more agile, ensuring customer responsiveness and quickly understanding market demand [2].

Digital supply chains rely on the collection and rapid analysis of real-time data to improve the accuracy of decision-making. Due to the visualization of digital supply chains, enterprises can monitor operations within the global network in real time. By leveraging various new technologies such as the Internet of Things (IoT) and Artificial Intelligence (AI), digital supply chains support greater flexibility and scalability [3]. Finally, by integrating digital platforms, the close collaboration of various links in the digital supply chain ultimately improves operational efficiency and customer satisfaction. The supply chain must achieve digital transformation, which stems from both technological advances and the dual pressures of intensified global competition. In this context, digital supply chains are a necessary condition for enterprises to survive and develop in a rapidly changing economic environment.

Platform economy is an economic model that uses digital platforms as intermediaries to connect producers, service providers, and consumers. The rapid development trend of this model has changed the way traditional supply chains operate. TikTok is a representative platform, as well as companies such as Amazon and Uber [4]. In addition to content dissemination and product delivery, this economic model also integrates logistics systems, data collection, and customer service. The platform economy has promoted the innovation of the supply chain system [4]. Understanding this change is of great value in analyzing how global digital platforms such as TikTok can improve operational efficiency and achieve global layout.

2.2 Research on TikTok

TikTok's strong growth has attracted research interest from both the business and academic communities. It was initially viewed as an entertainment platform, but due to academic attention, researchers have emphasized that the focus should shift to the depth and complexity of the platform. Scholars have found that TikTok's algorithm has characteristics that encourage users to interact frequently [5]. In addition to algorithmic research, TikTok's marketing and branding potential has also been widely studied. These studies focus on how companies can increase brand awareness through marketing communication activities [6]. Therefore, most existing research focuses on algorithms, content dissemination, user behavior, and brand marketing. Although previous research has provided valuable insights into the interaction between users and algorithms, few studies have explored TikTok's operational strategies from a digital supply chain perspective.

2.3 Limitations of Exiting researches and Study Purpose

As mentioned above, existing research mainly focuses on the design and application of platform algorithms, aiming to understand how algorithm push can achieve personalized content distribution [5]. At the same time, another part of the research focuses on the marketing communication part of TikTok, analyzing how companies use the platform to increase brand awareness and consumer loyalty [6].

Few existing related literatures combine the two aspects of how TikTok conducts cross-border operations through digital supply chains during its global expansion. A deeper understanding of the core issues of both will help analyze the role of digital supply chains in the global platform economy. This paper will study the construction of operations and mechanism coordination during TikTok's global expansion from the perspective of digital supply chain management. It will supplement the existing academic discussions and enrich the understanding of the evolution of digital supply chains in the platform economy era.

3. Research methodology

3.1 Research Design

This study uses a combination of case analysis, literature review and model construction to explore the evolution of digital supply chain management in TikTok's global expansion. TikTok is the most representative platform and can provide the most typical case.

First, this paper analyzes TikTok's supply chain architecture through case analysis, focusing on big data analysis, data flow and localized operation mode. Secondly, based on the literature review method, the research on digital supply chain transformation and platform economy is sorted out. Finally, through model construction, TikTok's digital supply chain process is presented.

Using three methods to conduct research, while building a conceptual model of TikTok's digital supply chain, analyze how TikTok operates across borders, how to integrate technology and formulate strategies, so as to discover the competitive advantages of the platform's rapid expansion and how it interacts with the global digital supply chain.

3.2 Research Methods and Data Sources

This study specifically adopted three methods: case analysis, literature review, and comparative study, corresponding to different research needs, to understand the changes in TikTok's digital supply chain management system in many aspects during its global expansion.

The case analysis method aims to systematically analyze the operation of TikTok. Taking TikTok as a case, the study focuses on in-depth analysis of key links such as TikTok's content push, data flow management, localized content production, and regional compliance operations. The analysis mainly refers to official information, platform reports, and third-party industry data. By sorting out TikTok's actual operating process, we can understand the core architecture of its platform's digital supply chain system.

The literature review method is used to construct a theoretical framework and analytical perspective. This study searches for keywords such as "digital supply chain" and "platform economy" on qualified websites such as Google Schloar to search for literature and screen out academic papers and research reports in related fields in recent years. By sorting out and summarizing existing research results, the positioning of TikTok's global expansion in the field of digital supply chain is clarified, and some deficiencies in academic research are understood, providing theoretical analysis for subsequent content.

The model building method is used to systematically integrate the dynamic relationship between various supply chain elements in TikTok's globalization process. The model comprehensively demonstrates the core path of TikTok's digital supply chain evolution. Through the design and presentation of the model, an intuitive framework is provided for the digital supply chain reconstruction process of platform-based enterprises.

3.3 Model Construction and Analysis

This study needs to build a global digital supply chain operation model for TikTok to analyze the key strategies and systems that support the platform's cross-border operations. The analysis model includes the following core elements: content push process, user data, data center and localized operation layout, and strategy differences.

The model design starts from content production to user interaction, then to data return, and finally optimizes content push to form a closed-loop process, which reflects the characteristics of the digital supply chain in TikTok's global expansion.

The model design follows the closed-loop logic and reflects the digital characteristics of the supply chain in TikTok's globalization process. The specific description is as follows: the information interaction process between content creators and the platform comment system; local optimization of the recommendation algorithm according to the preferences of users in different regions; the complete link from data collection, processing to storage in the local data center; policy adaptation and adjustment based on the data security and content compliance requirements of various countries. The model is constructed to show the overall architecture of TikTok's digital supply chain. The conceptual model is shown in Figure 1.
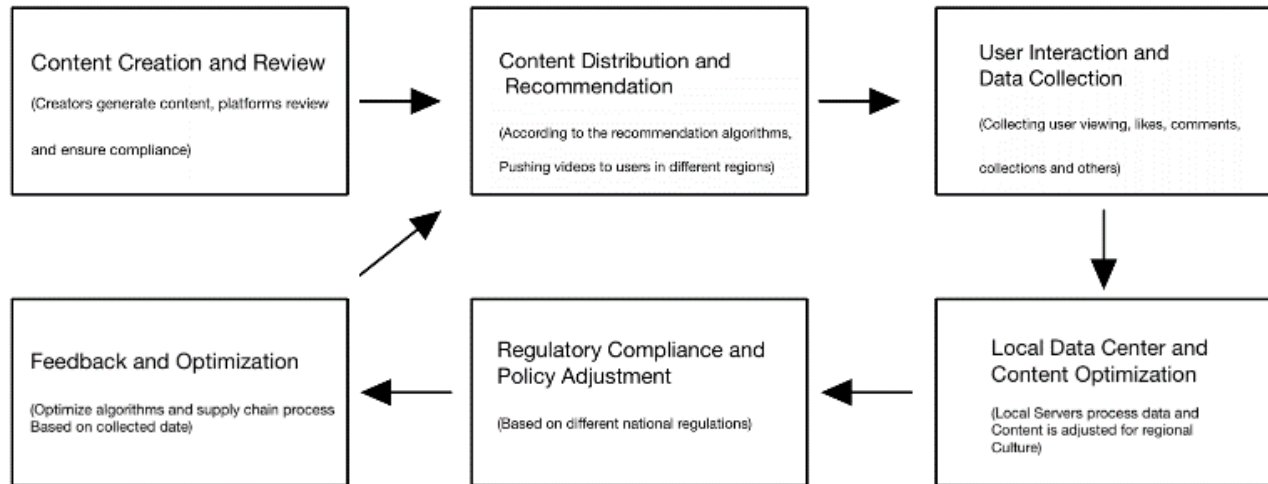
Figure 1. TikTok Global Digital Supply Chain Conceptual Model

As shown in Figure 1, TikTok's global digital supply chain system consists of six core modules, covering all aspects from content production and review, content distribution and recommendation, to user interaction and data collection, local data processing and optimization, regulatory compliance and policy adjustment, feedback and system optimization, forming a complete closed loop. The six modules are connected in series through the above links to achieve the digital evolution and continuous optimization of the supply chain system. The model in Figure 1 shows how TikTok plans cross-border operations, formulates cross-border rules and adapts to localized rules through digital supply chain means during its global expansion.

4. Results and analysis

4.1 Algorithms and Content Recommendations

During TikTok's global expansion, the factor that optimizes customer experience is the platform's unique recommendation algorithm. Through the recommendation algorithm, each user's basic behavior is tracked, such as the customer's viewing time, likes, sharing or collections. In this way, user preferences can be quickly learned to form personalized content push. This method can continuously adjust interest content based on real-time information, enhancing TikTok's user stickiness and activity . As shown in Figure 1, the first step of the entire process is user content creation and platform review. The platform needs to ensure that the content complies with local regulations, and then use the algorithm to recommend it to

interested users, and accurately push interest content to relevant users. TikTok will adjust relevant content to local users based on localized operation strategies, effectively facing cross-border differences, and optimizing the overall system of TikTok's global digital supply chain.

4.2 Data and Localization

The collection of user data and localized data management are also important components of the digital supply chain process. The platform collects user interaction data in real time, forms a database and optimizes the recommendation algorithm. In order to implement global expansion, TikTok has localized content in different countries and regions. TikTok's internationalization strategy will not simply copy and paste China's operating rules, but will adjust operational decisions based on local cultural differences, aesthetic preferences and social norms [7]. Companies make full use of the huge local user base and the rapidly changing market environment, combining the successful elements of social networks and short video platforms, innovating new business models and building unique competitive advantages.

4.3 Regulations and Adjustments

TikTok faces scrutiny from laws and regulations in different countries on its road to global expansion, and the platform needs to adjust its supply chain management strategy according to the policies of each region. The United States, China, and the European Union have taken distinctly different paths in data privacy governance:

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U.S. laws are relatively vague, emphasizing flexibility and openness; China strengthens national security control through strict legislation; and the European Union strictly enforces GDPR by establishing an independent regulatory agency [8]. TikTok must dynamically adjust its audit standards globally and actively cooperate with the laws and regulations of various regions. By establishing a multi-level compliance response mechanism and supply chain adjustment application system, TikTok not only provides stricter protection for user privacy, but also adapts to the global digital supply chain layout of the local regulatory environment.

4.4 Feedback and Optimization

During TikTok's expansion, it mainly relies on precise content recommendation mechanisms and flexible content optimization strategies. The platform analyzes user interaction data in real time and quickly responds to changes in user interests through a dynamic feedback mechanism. The platform not only recommends content based on user interests, but also optimizes the overall content ecosystem by combining group data trends [9]. In terms of continuous optimization, TikTok continuously updates the content recommendation logic by constantly adjusting the recommendation algorithm and introducing diverse creators. The platform regularly evaluates the popularity of content based on feedback data, giving more traffic to content with excellent performance and reducing the push frequency for content with declining user interest. Only through this continuous fine-tuning and strategy optimization can TikTok enhance the competitiveness of the platform. In addition, TikTok also responds promptly to changes in regulations and cultural preferences in different countries. This feedback-driven rapid adjustment mechanism enables TikTok to maintain operational flexibility in a changing global context and continuously optimize its global supply chain architecture.

5. conclusion

The research direction of this study is based on the evolution of the digital supply chain under TikTok's global expansion, mainly analyzing key factors such as content creation and platform push mechanism, data management, localized operation, legal and regulatory adjustments and dynamic optimization. The study shows that TikTok manages user data through recommendation algorithms to achieve a feedback mechanism, and at the same time must combine localized operational decisions and strictly abide by laws and regulations to ultimately achieve a rapid response to the global digital supply chain. This study theoretically enriches the understanding of platform-based enterprises and digital supply chain management, and provides an effective reference for the operating mechanism of cross-border platforms. However, since this study is mainly based on literature analysis and the cases are concentrated on a single TikTok platform, it is necessary to further expand the depth of research in the future through field research and multi-platform comparison.

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