

Cross border e-commerce platforms, logistics services and challenges: Basis for efficiency framework for cross border e-commerce industries

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Received: 30 January 2024
Available Online: 15 April 2024

Revised: 28 February 2024
DOI: 10.5861/ijrsm.2024.1024

Accepted: 16 March 2024

ISSN: 2243-7770
Online ISSN: 2243-7789

OPEN ACCESS



Abstract

With the global economic integration and the continuous development of Internet technology, cross-border electronic commerce has become a new field of global trade. However, due to the influence of national policies, laws and regulations, market size and consumer preferences, the development of cross-border electronic commerce is quite different in different countries and regions. It is necessary to establish an effective framework to optimize Taobao's cross-border electronic commerce platform and logistics services in order to improve its efficiency and competitiveness. The purpose of this study is to evaluate the relationship between cross-border e-commerce platforms, logistics service and challenges on Taobao and propose an effective cross-border e-commerce platform framework. This study takes employees of 15 e-commerce trading companies as the survey objects, used questionnaires to collect data, and analyzed the collected data through descriptive statistical analysis and correlation analysis. Combined with SPSS statistical software, the 401 valid data obtained were organized and analyzed to further analyze the relationship between cross-border e-commerce platforms, logistics service and challenges on Taobao. The results showed that respondents have moderate agreement on the key factors for success in cross-border e-commerce in terms of choosing the right platform, complying with all applicable regulations, and providing excellent customer service. They also agreed that the key factors for success in logistics service are reliability, economy, and timeliness. Respondents have moderately agreed that the key challenges in cross-border e-commerce are cultural differences, network security, and market research. There are significant relationships among cross border e-commerce and logistics service, E-commerce platform and challenges and logistics services and challenges. An efficiency framework was developed for cross-border e-commerce. The study's efficiency framework, tailored to cross-border e-commerce platforms and logistics services, can help businesses streamline operations, reduce costs, and improve customer satisfaction. This can lead to a competitive advantage in a rapidly growing market. Identifying crucial platform features and efficient logistics services through this research can guide businesses in selecting the most suitable partners for their cross-border

operations.

Keywords: cross border e-commerce platforms, logistics services, challenges, efficiency framework

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1. Introduction

The global landscape of commerce is undergoing a significant transformation, driven by the burgeoning growth of cross-border e-commerce. This dynamic industry has revolutionized the way consumers purchase goods, offering them access to a wider variety of products and competitive prices from international markets. At the heart of this ecosystem lie cross-border e-commerce platforms, connecting buyers and sellers across geographical borders. However, efficient and successful cross-border trade relies heavily on robust logistics services that can navigate the complexities of international shipping, customs regulations, and diverse cultural nuances.

A cross-border e-commerce platform is an online marketplace that facilitates the buying and selling of goods between international buyers and sellers. These platforms act as intermediaries, connecting businesses and consumers across geographical borders, similar to how traditional e-commerce platforms connect domestic buyers and sellers within a single country. They enable businesses to sell their products to a wider audience, reaching customers in different countries and expanding their market reach Altug et al., (2020). Cross border e-commerce platform typically operate as marketplaces, bringing together a diverse range of sellers offering various products under one roof. Many platforms offer features like multilingual support, currency conversion, and localized marketing tools to cater to international audiences. They often handle international payment processing, facilitating secure transactions between buyers and sellers across borders and some platforms may offer additional logistics support, such as customs clearance assistance and international shipping options.

The evolution of Taobao is a compelling journey that intertwines with the socio-economic landscape of China, leaving an indelible mark on the e-commerce industry. While Taobao itself primarily caters to domestic Chinese consumers, its parent company, Alibaba, operates a prominent cross-border e-commerce platform called Tmall Global. Launched in 2014, Tmall Global allows international brands and merchants to sell directly to Chinese consumers through a B2C model. Therefore, Taobao, as a platform, doesn't directly facilitate cross-border e-commerce, but its parent company plays a significant role in the sector through Tmall Global (Cao et al.,2021).

Cross-border e-commerce platforms have emerged as a significant force in global trade, revolutionizing how businesses and consumers interact across borders. The global cross-border e-commerce market is experiencing rapid growth, projected to reach \$6.5 trillion by 2027 (Statista, 2023). This growth is attributed to factors like increasing internet penetration, rising disposable incomes, and growing consumer demand for diverse products (Hwang et al., 2018). Cross-border e-commerce platforms contribute to economic growth by creating new market opportunities for businesses, fostering innovation, and generating employment (UNCTAD, 2019).

Logistics services play a critical role in the smooth operation of cross-border e-commerce, ensuring the efficient movement of goods from sellers to international buyers. It encompasses international shipping like selecting appropriate shipping methods (air, sea, etc.) based on cost, speed, and product characteristics (Yuan, 2022). It also includes customs clearance which is navigating complex customs regulations and procedures in different countries Ali et al., (2023), warehousing and fulfillment which is storing and managing inventory in strategic locations to facilitate efficient order fulfillment Hwang et al., (2018), tracking and tracing which is providing real-time visibility of shipment status for both seller and buyers (Cao et al., 2021) and return and exchange processing like handling the reverse logistics process for returns and product exchanges (UNCTAD, 2023).

Challenges in cross-border e-commerce represent the various obstacles and complexities that hinder the smooth and efficient flow of goods and services across international borders through online platforms. These

challenges can arise from various factors, impacting both businesses and consumers involved in cross-border transactions (Ali et al., 2023).

Some challenges include logistics complexities, which are high costs and longer delivery times. International shipping involves higher costs compared to domestic e-commerce, and navigating customs procedures can lead to extended delivery times (Yuan, 2022). There are also regulatory hurdles because of varying customs regulations in different countries. Complying with diverse and intricate customs requirements across different countries can be challenging and time-consuming, posing a significant barrier to smooth transactions (Hwang et al., 2018). Moreover, there are evolving tax regulations in different countries. Keeping up with frequent changes in import duties and taxes across various countries can be difficult for both platforms and sellers, adding complexity to the process (Cao et al., 2021). Payment processing is also experienced because of currency fluctuations. Fluctuations in exchange rates can impact both sellers and buyers, introducing uncertainty and potential financial risks to cross-border transactions.

Addressing these challenges and fostering efficient operations within the industry requires a comprehensive understanding of the interplay between platforms, logistics, and the inherent challenges (Wang, et al., 2023.). The unfolding narrative of the Global E-commerce Tapestry, crafted by cross-border platforms, signifies more than a mere shift in consumer habits. It is a profound testament to the intricate interplay between technology and consumer behavior. The complexities inherent in cross-border transactions, such as logistics hurdles, regulatory variations, and payment processing challenges, demand innovative solutions to ensure smooth operations. Optimizing efficiency is paramount for businesses to thrive in this competitive landscape, reducing costs and enhancing customer satisfaction. Therefore, this study aims to contribute to the development of efficient and sustainable practices within the cross-border e-commerce industry. By exploring the aforementioned aspects and potentially developing an efficiency framework, this research can benefit various stakeholders, including businesses seeking to optimize operations, policymakers formulating informed regulations, and researchers contributing to the evolving knowledge base in this dynamic field.

Objectives of the Study - The study aims to assess the cross border e-commerce platform, logistics services and challenges in Taobao that will be the basis in developing e-commerce framework. Specifically, the study described cross the border e-commerce as to platform, compliance and customer service; assessed the logistics services as to reliability, economy and timeliness; determined the challenges as to cultural difference, network security and market research; tested the significant relationship between cross border e-commerce platform, logistics services and challenges and developed an e-commerce framework to enhance the cross border e-commerce services

2. Methods

Research Design - Descriptive research aims to describe the characteristics of a phenomenon or population (Creswell, 2018). In this context, it could be used to paint a picture of the current state of cross-border e-commerce platforms, logistics services, and the challenges faced by stakeholders. This information is crucial for identifying key issues and informing the development of solutions (Yin, 2018). Descriptive research can serve as a foundation for future studies by providing a comprehensive understanding of the research area (Creswell, 2018). This is valuable when exploring new or complex topics like cross-border e-commerce, where a clear grasp of the current landscape is essential before delving into more specific research questions. By providing detailed information about the existing situation, descriptive research can inform decision-making for various stakeholders.

Participants of the Study - Studies exploring cross-border e-commerce platforms, logistics services, and challenges chose 401 employees of 15 e-commerce trading businesses in Guangdong, Shenzhen, Guangzhou and Zhongshan, Zhejiang, Beijing, Shandong, Jiangsu and Fujian. The employees have firsthand knowledge and diverse perspectives. Employees are directly involved in various aspects of cross-border e-commerce possess firsthand knowledge of the platforms, logistics, and challenges encountered. They can provide insights into

platform functionalities, logistics efficiency, and practical operational hurdles. Including employees from different departments (marketing, logistics, customer service) gathers diverse perspectives, ensuring the study captures a wider range of challenges and leads to a framework addressing various needs. Employee participation fosters a sense of ownership and buy-in for the resulting efficiency framework, crucial for successful implementation and adoption within the organization. Their practical expertise in navigating cross-border complexities helps identify real-world challenges and develop a framework grounded in practical realities, ensuring its feasibility and effectiveness.

Instruments of the Study - A self-made questionnaire was tailored to address the unique context, platforms, and logistics services they utilize. By creating the questionnaire themselves, the proponent can ensure that it focuses on the most relevant aspects for developing the efficiency framework. This avoids including irrelevant questions from generic questionnaires that might not be applicable to the specific research objectives. Also, a self-made questionnaire allowed researchers to easily adapt and modify questions as needed to capture emerging trends, challenges, or platform functionalities. The proponent also had complete control over the content, wording, and format of the questionnaire, ensuring it accurately reflects the research objectives and terminology used within the specific e-commerce businesses. Data collection primarily relied on a questionnaire structured around Likert's four-point scale. The scoring system was designed to convey degrees of agreement, with higher scores indicating stronger agreement and lower scores reflecting lesser agreement. Specifically, a score of "4" denoted strong agreement (SA), "3" represented agreement (A), "2" signaled disagreement, and "1" indicated strong disagreement (SD).

In order to effectively achieve the objectives of the study, an enhanced survey instrument was used to ensure the assessment of the E-commerce Platforms, Logistics Services and challenged used by the participants. The questionnaire was divided into four different sections. The first section focused on collecting basic personal information including demographic details such as age, gender, marital status, highest level of education, teaching experience, job position, title and monthly salary. The second part focused on the assessment of the specific aspects related to E-commerce Platforms, Logistics Services and Challenges. To ensure the reliability and consistency of the questionnaires and scales, Cronbach's alpha analysis was applied to assess internal consistency. The reliability coefficient, which ranges between 0 and 1, was utilized to represent reliability. Coefficients exceeding 0.6 were considered satisfactory, while a range of 0.7-0.8 indicated considerable reliability, and 0.8-0.9 suggested excellent reliability. This rigorous analysis aimed to establish the trustworthiness and stability of the measurement tools in the academic context, providing a solid foundation for the study's research design and data collection methodology.

Data Gathering Procedures - After testing and passing the reliability of the questionnaire, capturing the multifaceted aspects of "E-commerce Platforms, Logistics Service, and Challenges", the proponent established initial contact with HR departments or managers in the 15 participating e-commerce companies to explain the research objectives and seek their approval for employee participation. The study used mixed approach in gathering data from the respondents. The proponent combined online and paper-based options to cater to employee preferences and accessibility. An online survey forms were to administer the questionnaire conveniently and efficiently. This allows for anonymous participation and centralized data collection. To those whose internet access is limited, the proponent considered providing paper-based questionnaires with clear instructions and designated collection points at each company. After completing the data gathering, the proponent, collated the data, interpreted and analyzed the results.

Data Analysis - In the analysis of the data collected for the study, various statistical tools and methods were employed to derive meaningful insights. Weighted mean and rank were used describe the cross border e-commerce as to platform, compliance and customer service; determine the logistics services as to reliability, economy and timeliness; determine the challenges as to cultural difference, network security and market research. The result of Shapiro-Wilk Test showed that p-values of all variables were less than 0.05 which means that the data set was not normally distributed. Therefore, Spearman rho was used as part of the non-parametric tests to determine the significant relationship. All analyses were performed using SPSS version 28.

Ethical Considerations - One key ethical consideration is the issue of informed consent. Participants, especially those contributing through interviews or surveys, must be fully informed about the study's purpose, the nature of their involvement, and how their data will be utilized (Liu et al., 2021). Researchers prioritized transparency to ensure that participants make informed decisions about their participation. Confidentiality is another critical ethical aspect. The study involves collecting potentially sensitive data, and researchers must ensure the confidentiality of this information (Alamdari et al., 2020). Safeguarding participants' privacy and business-related details is paramount, and measures should be in place to prevent unauthorized access or breaches. Data security is closely related to confidentiality. Researchers must implement robust measures to secure the data collected throughout the research process. This includes secure storage, protection from unauthorized access, and responsible data management practices. Privacy protection is essential, particularly when dealing with participants who may be sharing details about business practices or challenges. Anonymizing data to prevent the identification of individuals or businesses contributes to protecting their privacy (Chen et al., 2023). Fair treatment of participants is an ethical imperative, especially in interactions with industry experts, practitioners, or stakeholders. Researchers should avoid any form of coercion, manipulation, or bias, ensuring a respectful and equitable engagement with participants (Lahkani et al., 2020). Transparent reporting is a fundamental ethical consideration. The results of the study should be accurately represented without selective reporting, contributing to the integrity and trustworthiness of the research.

3. Results and discussion

Table 1

Summary Table on E-commerce Platforms

Key Result Areas	Composite Mean	VI	Rank
Platform	3.17	Agree	2
Compliance	2.98	Agree	3
Customer Service	3.23	Agree	1
Grand Composite Mean	3.13	Agree	

Legend: 3.50-4.00=Strongly Agree; 2.50-3.49=Agree; 1.50-2.49=Disagree; 1.00-1.49=Strongly Disagree

Table 1 summarizes the e-commerce platforms with a grand composite mean of 3.13, synthesizing insights from diverse indicators that delve into platform compliance, and customer service. This holistic approach condenses intricate facets, providing a nuanced understanding of the platform's performance across critical dimensions (Janjevic et al., 2020). The Grand Composite Mean, amalgamating scores across all categories and standing at 3.13 within the "Agree" range, paints a picture of an overall positive perception of the platform across different dimensions. Although slightly lower than the Composite Mean for "Customer Service," it surpasses that for "Compliance," showcasing a balanced performance across key result areas.

In the "Platform" category, the Composite Mean of 3.17, comfortably residing within the "Agree" range, indicates a favorable perception among users regarding the platform's functionality. This encompasses user-friendliness, search capabilities, product management, overall shopping experience, marketing support, and customer service. Though slightly trailing the "Customer Service" category, its second rank underscores a commendable performance and user satisfaction.

The "Compliance" category achieves a Composite Mean of 2.98, signaling a general agreement among users regarding the platform's adherence to laws and regulations. Falling within the "Agree" range, it denotes a satisfactory level of compliance. However, its third rank suggests potential room for enhancement, urging the platform to further align with regulatory standards and expectations. The "Customer Service" category claims the highest Composite Mean of 3.23, securing the coveted first rank. This pinnacle position signifies users' profound

appreciation and agreement with the quality of customer service offered by the platform. Positive scores across various indicators, such as colleague and institutional support, teaching supervision, feedback mechanisms, work-life balance encouragement, and teamwork, contribute to this high mean, reflecting positively on the platform's steadfast commitment to user support (Cárdenas et al., 2017).

The practical implications of Table 1 for E-commerce Platforms, especially those entangled in cross-border trade complexities, are profound. The paramount importance accorded to customer service excellence resonates with the user-centric essence of successful platforms. The accentuation of compliance highlighted a focal point for potential enhancement, urging the platform to align seamlessly with regulatory landscapes in diverse markets (Van Asch et al., 2020).

Table 1 stands as a strategic guidepost for platform developers and stakeholders, providing valuable insights into areas of strength and avenues for improvement (Mucowska, 2021). The rankings and Composite Means unveil a clear snapshot of user perceptions, serving as a compass for strategic decision-making and the continual evolution of platforms like Taobao in the expansive realm of global e-commerce. These insights hold the potential to inform strategic planning, facilitate user experience enhancement, and shape effective compliance strategies, ensuring that Taobao retains its pioneering position in the continually evolving global e-commerce landscape.

Table 2

Summary Table on Logistics Service

Key Result Areas	Composite Mean	VI	Rank
Reliability	3.14	Agree	3
Economy	3.23	Agree	1
Timeliness	3.21	Agree	2
Grand Composite Mean	3.19	Agree	

Legend: 3.50-4.00=Strongly Agree; 2.50-3.49=Agree; 1.50-2.49=Disagree; 1.00-1.49=Strongly Disagree

Table 2 summarizes the logistics services as to reliability, economy and timeliness with a grand composite mean of 3.19. The agreed rating indicates that the current logistics services employed by the participating e-commerce companies are perceived as somewhat effective in meeting customer needs in terms of reliability, cost-efficiency, and delivery speed. Among the dimensions of logistics services, economy was rated the highest score. In the competitive e-commerce landscape, price sensitivity is often a significant factor for consumers. This translates to increased pressure on businesses to keep their overall costs, including logistics, as low as possible.

As revealed by Lai et al., (2021) employees may prioritize cost-efficiency in logistics services, as it directly impacts the final price point of products offered to customers. By ensuring cost-effective logistics, businesses can remain competitive and potentially offer lower prices, attracting more customers. Moreover, e-commerce businesses constantly strive to optimize their operational costs across various aspects, including logistics. Employees might be aware of and appreciate the efforts made by their companies in securing cost-efficient logistics solutions, which can translate to higher profit margins and improved financial performance.

As for Strategic Insights for Taobao, this table offers strategic insights into the strengths and potential improvement areas for Taobao's logistics services. While Reliability and Economy receive positive evaluations, there's an opportunity to further enhance Timeliness. Addressing this area strategically can position Taobao as a more robust and competitive player in the market. The composite mean serves as a strategic guide, directing future efforts to maintain and elevate the overall excellence of Taobao's logistics services. In the dynamic realm of cross-border e-commerce logistics, ongoing monitoring, analysis of user feedback, and proactive adjustments will be crucial for staying ahead in the market.

Table 3 offers a consolidated overview of the challenges faced by Taobao in the domains of cultural differences, network security, and market research with a grand composite mean of 3.05. These challenges are pivotal in shaping the platform's strategies for successful cross-border e-commerce operations. As for Grand Composite Mean (3.05), the grand composite mean of 3.05 across these challenges reflects an overall agreeable stance. This implies that while the challenges are recognized, Taobao is actively engaged in addressing them (Shi, 2022). The platform can leverage this understanding as a foundation for strategic enhancements, innovation, and targeted initiatives to fortify its global position.

Table 3*Summary Table on Challenges*

Key Result Areas	Composite Mean	VI	Rank
Cultural differences	3.03	Agree	3
Network Security	3.07	Agree	1
Market Research	3.05	Agree	2
Grand Composite Mean	3.05	Agree	

Legend: 3.50-4.00=Strongly Agree; 2.50-3.49=Agree; 1.50-2.49=Disagree; 1.00-1.49=Strongly Disagree

Securing the top position in challenges, network security is highlighted with a composite mean of 3.07. This underscores the critical nature of safeguarding customer information in cross-border transactions. Taobao's acknowledgment of this challenge positions it well to invest in robust cybersecurity measures, conduct regular audits, and ensure that its users can trust the platform with their sensitive data (Patella et al., 2020). Among the challenges, network security got the highest in rank (3.07). Network security claims the top position highlighting its critical importance in the cross-border e-commerce landscape. Cross-border operations involve interactions with multiple networks, systems, and partners across various countries. This expanded digital footprint significantly increases potential attack points and vulnerabilities. It is worth noting that different countries might have varying network security regulations and standards, making it challenging to implement consistent protection measures across the entire operation. Moreover, e-commerce businesses process large amounts of sensitive customer data, including names, addresses, payment information, and even purchase histories. This data is a prime target for cybercriminals. (Kim et al., 2021). Market research emerges as a complex challenge, indicated by a composite mean of 3.05. Taobao is cognizant of the variations in consumer behaviors across different countries. This insight provides a foundation for the platform to enhance its market research capabilities by adopting advanced technologies, addressing language barriers, and streamlining research processes for a more agile and informed approach.

The grand composite mean of 3.05 signifies an overall agreeable stance towards these challenges (Tae-Woo Lee et al., 2023). Taobao's willingness to confront these issues head-on positions it as a platform that understands the dynamic nature of cross-border e-commerce. This provides a realistic foundation for strategic planning, innovation, and continuous improvement. These challenges offer practical implications for Taobao's future strategies. By addressing cultural differences, fortifying network security, and enhancing market research capabilities, Taobao can position itself as a resilient and adaptive player in the competitive landscape of cross-border e-commerce (Wang et al., 2018). Embracing these challenges as opportunities for growth and improvement is key to long-term success.

In summary, Table 3 serves as a roadmap for Taobao, highlighting areas where strategic investments and improvements can be made. By navigating these challenges effectively, Taobao can strengthen its position as a leading cross-border e-commerce platform with a global reach. Table 13 serves as a roadmap for Taobao to navigate the complexities of cultural diversity, cybersecurity, and market dynamics. By embracing these challenges and proactively adapting its strategies, Taobao can position itself as a resilient and responsive player in the ever-

evolving landscape of cross-border e-commerce.

Table 4 offers a nuanced exploration of the intricate relationship between E-commerce Platforms and Logistics Services, shedding light on their interplay across multiple variables (Cardenas, 2017). The correlation coefficients (rho-values) and associated p-values emerge as pivotal metrics, illuminating the strength and statistical significance of these associations.

Table 4

Relationship Between E-commerce Platforms and Logistics Service

Variables	rho-value	p-value	Interpretation
Platform			
Reliability	0.702**	0.000	Highly Significant
Economy	0.728**	0.000	Highly Significant
Timeliness	0.715**	0.000	Highly Significant
Compliance			
Reliability	0.699**	0.000	Highly Significant
Economy	0.680**	0.000	Highly Significant
Timeliness	0.703**	0.000	Highly Significant
Customer Service			
Reliability	0.657**	0.000	Highly Significant
Economy	0.739**	0.000	Highly Significant
Timeliness	0.717**	0.000	Highly Significant

***. Correlation is significant at the 0.01 level*

The high significant relationship between E-commerce Platforms and Logistics Service can be attributed to the interdependence and mutual impact these two components have on each other within the context of the broader e-commerce ecosystem. This relationship is crucial for ensuring a seamless and satisfactory customer experience, influencing the competitiveness and overall success of e-commerce platforms. Several factors contribute to the significance of this relationship. Firstly, the efficiency and reliability of logistics services directly affect the fulfillment of customer orders. In the fast-paced world of e-commerce, customers expect timely and accurate deliveries. A well-coordinated logistics system ensures that products are shipped promptly, meeting customer expectations for speed and reliability. This aligns with the findings of Karunarathna (2020), who emphasized the importance of real-time tracking and timely updates in logistics for a seamless customer experience. Secondly, logistics play a pivotal role in customer satisfaction and retention. Delays, inaccuracies, or complications in the delivery process can lead to dissatisfied customers and negatively impact the reputation of the e-commerce platform. Shi (2022) highlighted the significance of effective communication and transparency in logistics processes for managing customer expectations and building trust. A satisfied customer is more likely to become a loyal, repeat customer, contributing to the long-term success of the e-commerce platform. Moreover, the global nature of e-commerce, particularly in cross-border trade, amplifies the importance of logistics. Cross-border logistics involve additional complexities such as customs regulations, international shipping, and varying delivery timelines.

Platforms that can efficiently navigate these challenges gain a competitive edge. ESCAP (2019) asserted the multi-faceted nature of logistics in cross-border e-commerce, indicating that its effectiveness contributes to the overall competitiveness of the platform. Literature also supports the idea that operational excellence in logistics is

foundational for the success of e-commerce platforms. Pua (2023) highlighted the importance of operational excellence in various dimensions of logistics services, extending beyond customer interactions to supply chain management, technology integration, and organizational agility. This foundation is instrumental in fortifying the platform's standing as an industry leader. Furthermore, adaptability and continuous improvement in logistics services are essential for keeping pace with the evolving landscape of e-commerce. Patella et. al., (2020) underscored the dynamic nature of logistics services, influenced by technological advancements, global events, and shifting consumer expectations. E-commerce platforms that can adapt swiftly and embrace iterative improvements are better positioned for sustained success. The high significant relationship between E-commerce Platforms and Logistics Service is driven by the critical role logistics play in ensuring efficient order fulfillment, enhancing customer satisfaction, navigating cross-border complexities, and contributing to the overall competitiveness and success of the platform. The literature consistently emphasizes the importance of real-time tracking, transparency, operational excellence, and adaptability in logistics for a thriving e-commerce ecosystem.

Delving into the Platform and Logistics Service Relationship, it becomes apparent that reliability, economy, and timeliness exhibit highly significant positive correlations. A notable rho-value of 0.702 for reliability underscores that as the e-commerce platform enhances its reliability, a corresponding enhancement is observed in the reliability of logistics services. This coherence extends to economy and timeliness, with robust positive correlations (rho = 0.728 and 0.715, respectively), indicating that an economical and timely platform aligns harmoniously with cost-effective and punctual logistics services (Zhou, 2022).

Shifting focus to the Compliance and Logistics Service Relationship, the analysis unravels consistently high and statistically significant correlations. Compliance within the platform manifests positive correlations with the reliability (rho = 0.699), economy (rho = 0.680), and timeliness (rho = 0.703) of logistics services. This implies that a platform committed to regulatory adherence tends to proffer logistics services characterized by reliability, cost-effectiveness, and punctuality. Further exploration of the Customer Service and Logistics Service Relationship reinforces the significance of positive correlations. The study reveals that reliable, economical, and timely customer service on the platform strongly correlates with analogous attributes in logistics services (rho = 0.657, 0.739, and 0.717, respectively). This implies that a platform prioritizing these aspects in customer service is likely to extend similar characteristics seamlessly to its logistics services. The correlation analysis yields compelling evidence of the interconnectedness across diverse dimensions of e-commerce platforms and logistics services. The results underscore the pivotal role of a reliable, economical, and timely platform in nurturing corresponding attributes within logistics services, underscoring the indispensable nature of these factors in sculpting a seamless and efficient cross-border e-commerce experience (Giuffrida et. al., 2020).

Table 4 presents a comprehensive analysis of the correlation between E-commerce Platforms and Logistics Services across various dimensions, shedding light on the intricate relationships between these critical components in the context of cross-border e-commerce, particularly focusing on "Taobao." The first notable insight is derived from the examination of the Platform and Logistics Service Relationship. The high and significant positive correlations (rho-values) between reliability, economy, and timeliness of the platform and logistics services indicate a symbiotic relationship. Improvements in the reliability, cost-effectiveness, and timeliness of the platform are reflected in analogous enhancements in logistics services. For "Taobao," this implies that investing in a dependable and efficient platform directly contributes to a more reliable and timely logistics system, fostering positive user experiences (Książkiewicz et. al., 2017).

Moving to the Compliance and Logistics Service Relationship, the findings reinforce the critical role of adherence to regulations. The strong positive correlations between platform compliance and the reliability, economy, and timeliness of logistics services underscore the interconnectedness of regulatory compliance and efficient logistics. For a cross-border giant like "Taobao," this suggests that aligning platform operations with international regulations positively impacts the compliance and effectiveness of logistics services, ensuring a smooth cross-border trade environment. The analysis then delves into the Customer Service and Logistics Service Relationship. The significant positive correlations signify that a platform prioritizing reliable, economical, and

timely customer service extends these attributes to its logistics services. This is a crucial insight for "Taobao" as it emphasizes the holistic impact of customer service practices on the overall efficiency of logistics operations.

In essence, Table 4 paints a vivid picture of the interdependencies between different dimensions of e-commerce platforms and logistics services. The insights garnered from this correlation analysis offer strategic guidance for "Taobao" and similar platforms, highlighting the need for comprehensive improvements in reliability, economy, and timeliness across domains to achieve a seamless and efficient cross-border e-commerce ecosystem. Table 5 presents a detailed analysis of the relationship between various variables associated with E-commerce platforms and the challenges they pose. The variables are categorized into distinct aspects, including Cultural differences, Network Security, Market Research, Compliance, and Customer Service. These categories serve as key dimensions through which the correlation between E-commerce platform variables and specific challenges is examined.

In terms of correlation strength, the Rho-values are notably high across the board, ranging from 0.672 to 0.815. This indicates a robust positive correlation between E-commerce platform variables and the challenges outlined in the table. The magnitude of these correlations suggests that changes or characteristics in one variable are strongly associated with changes in the other. Furthermore, the statistical significance of these correlations is underscored by the P-values, all of which are exceptionally low (0.000). This implies an extremely low probability that the observed correlations are due to random chance. (Van Asch et al., 2020) The high statistical significance adds a layer of reliability to the findings, indicating a genuine and meaningful relationship between E-commerce platform variables and challenges.

Table 5

Relationship Between E-commerce Platforms and Challenges

Variables	rho-value	p-value	Interpretation
Platform			
Cultural differences	0.721**	0.000	Highly Significant
Network Security	0.704**	0.000	Highly Significant
Market Research	0.695**	0.000	Highly Significant
Compliance			
Cultural differences	0.815**	0.000	Highly Significant
Network Security	0.697**	0.000	Highly Significant
Market Research	0.726**	0.000	Highly Significant
Customer Service			
Cultural differences	0.672**	0.000	Highly Significant
Network Security	0.763**	0.000	Highly Significant
Market Research	0.809**	0.000	Highly Significant

***. Correlation is significant at the 0.01 level*

The interpretation column succinctly reinforces the significance of the observed correlations, consistently labeling them as "Highly Significant." This terminology emphasizes the strength and importance of the relationships identified in the study. Such high significance levels imply that the correlations are not incidental but rather indicative of meaningful connections between the variables. The significant relationship between E-commerce Platforms and Challenges is a multifaceted dynamic that stems from the inherent complexities and evolving nature of the e-commerce landscape. This relationship is characterized by the constant interplay between platforms and the diverse challenges they encounter, influencing strategic decision-making, operational efficiency,

and overall sustainability. Several factors contribute to the significant relationship between E-commerce Platforms and Challenges. Firstly, the rapid technological advancements in the e-commerce sector give rise to both opportunities and challenges. The integration of new technologies, such as artificial intelligence, blockchain, and data analytics, offers innovative solutions to enhance user experience and operational efficiency. However, the adoption of these technologies also introduces challenges related to cybersecurity, data privacy, and the need for continuous adaptation (Dwivedi et al., 2019). The literature underscored the dual nature of technological advancements, emphasizing the need for platforms to navigate challenges while leveraging the benefits (Sohrabi et al., 2020).

Secondly, the global nature of e-commerce introduces challenges related to cross-border trade. International transactions involve diverse regulatory environments, varying consumer behaviors, and logistical complexities. Platforms operating in multiple regions must navigate these challenges to provide a seamless experience for users worldwide (Kim et al., 2020). The literature highlights the challenges of cross-border e-commerce, emphasizing the need for platforms to develop strategies that address regulatory differences and cultural nuances (Laudon et al., 2019). Moreover, the evolving consumer expectations and behaviors contribute to the challenges faced by e-commerce platforms. As consumers demand more personalized experiences, faster deliveries, and sustainable practices, platforms need to adapt to these changing expectations. This dynamic interaction between platforms and consumer preferences requires constant innovation and flexibility (Chaffey et al., 2019). The literature emphasizes the importance of understanding and meeting evolving consumer expectations to stay competitive in the e-commerce landscape (Grewal et al., 2017).

Additionally, the competitive nature of the e-commerce market intensifies the challenges faced by platforms. Rivalry among platforms leads to a race for innovation, cost-effectiveness, and market differentiation. This competitive pressure drives platforms to confront challenges related to market saturation, customer acquisition costs, and the need for continuous improvement (Hitt et al., 2020). The literature recognizes the competitive dynamics in e-commerce and emphasizes strategic responses to navigate challenges and gain a competitive edge (Porter, 2008). Furthermore, challenges related to supply chain disruptions, inventory management, and fulfillment complexities directly impact the operational efficiency of e-commerce platforms. The COVID-19 pandemic, for instance, exposed vulnerabilities in global supply chains, highlighting the need for platforms to build resilience and contingency plans (Ivanov, 2020). The literature stresses the importance of robust supply chain management to mitigate risks and ensure business continuity (Ivanov et al., 2020). The significant relationship between E-commerce Platforms and Challenges is driven by the intricate interplay between technological advancements, global dynamics, consumer expectations, market competition, and operational complexities. The literature consistently underscores the challenges inherent in the e-commerce sector and provides insights into strategic approaches for platforms to navigate these challenges successfully. Platforms that can effectively address and adapt to the diverse challenges are better positioned for sustained success in the dynamic and competitive e-commerce landscape.

The use of double asterisks (**) in denoting significance at the 0.01 level serves as a visual cue, further accentuating the confidence level in the observed relationships. This standard notation reinforces the reliability of the findings, providing a clear indication to readers about the robustness of the statistical analyses conducted. Table 5 serves as a valuable tool for understanding the intricate relationships between E-commerce platform variables and the associated challenges. Its meticulous presentation of Rho-values, P-values, and clear interpretations contributes to a comprehensive and reliable analysis, enabling researchers and practitioners to make informed decisions in addressing challenges within the E-commerce landscape. This table sheds light on critical insights and practical implications for cross-border e-commerce platforms, logistics services, and challenges specific to "Taobao." The robust correlations and high statistical significance underscore the intricate relationships between various variables, presenting an opportunity for nuanced strategies to enhance the operational efficiency and user experience of Taobao in the international market (Jiao, 2016). The pronounced significance of cultural differences as a challenge implies that Taobao needs to adopt tailored communication strategies to bridge the gap between users and sellers from diverse cultural backgrounds. Implementing culturally sensitive features and language

support may prove instrumental in fostering a more inclusive and user-friendly environment on the platform.

Moreover, the elevated significance of network security highlights the imperative for Taobao to fortify its cybersecurity measures. This involves not only technological investments in advanced security solutions but also comprehensive staff training to ensure a vigilant and proactive approach to safeguarding user information and transactions. The table's emphasis on the importance of market research unveils an ongoing need for Taobao to stay attuned to evolving market dynamics. Regular market research initiatives, coupled with a keen analysis of user feedback, can empower the platform to adapt swiftly to changing user preferences and industry trends, ultimately fostering sustained growth and competitiveness. In the realm of logistics services, if a significant correlation exists, it signals a call for Taobao to optimize and bolster its logistics network. This optimization could encompass forging strategic partnerships with reliable logistics providers (Mucowska, 2021), investing in cutting-edge logistics technologies, and streamlining operational processes to ensure seamless and timely order fulfillment.

By delving into these nuanced correlations, Taobao can craft targeted and adaptive strategies to proactively address the identified challenges. This holistic approach not only bolsters the platform's resilience in the face of cultural, security, and logistical challenges but also positions Taobao as a dynamic and user-centric player in the cross-border e-commerce landscape.

Table 6 offers a nuanced understanding of the correlation between Logistics Services and Challenges, shedding light on the intricate relationships between these aspects within the context of cross-border e-commerce, specifically focusing on "Taobao."

Table 6

Relationship Between Logistics Service and Challenges

Variables	rho-value	p-value	Interpretation
Reliability			
Cultural differences	0.681**	0.000	Highly Significant
Network Security	0.744**	0.000	Highly Significant
Market Research	0.702**	0.000	Highly Significant
Economy			
Cultural differences	0.637**	0.000	Highly Significant
Network Security	0.743**	0.000	Highly Significant
Market Research	0.694**	0.000	Highly Significant
Timeliness			
Cultural differences	0.734**	0.000	Highly Significant
Network Security	0.718**	0.000	Highly Significant
Market Research	0.800**	0.000	Highly Significant

** Correlation is significant at the 0.01 level

Starting with the analysis of the Relationship Between Reliability and Challenges, the high and significant positive correlations (rho-values) across Cultural Differences, Network Security, and Market Research are striking. A rho-value of 0.681 suggests that as the reliability of logistics services improves, challenges related to cultural differences significantly decrease. A similar pattern is observed for Network Security (rho = 0.744) and Market Research (rho = 0.702). This implies that by enhancing the reliability of logistics services, "Taobao" can effectively address challenges associated with cultural differences, network security, and market research.

The significant relationship between Logistics Service and Challenges within the context of e-commerce

platforms can be explored through an in-depth analysis. The literature underscores that logistics services, being an integral part of the supply chain in e-commerce, are inherently linked with various challenges that can impact the efficiency and effectiveness of the entire system. One key aspect contributing to this relationship is the complexity of global supply chains. As highlighted by Ivanov et al.,(2020), the interconnected nature of supply chains across international borders introduces logistical intricacies. Challenges such as customs clearance, adherence to diverse regulations, and the coordination of multiple stakeholders become prominent in the global logistics landscape.

This complexity can lead to bottlenecks and disruptions in the seamless flow of goods, affecting the overall performance of logistics services. Moreover, logistics services are susceptible to a myriad of disruptions and risks. The literature emphasizes that unforeseen events, ranging from natural disasters to geopolitical tensions, can significantly impact the logistical operations of e-commerce platforms (Ivanov et al., 2020). The ability to effectively navigate and mitigate these risks is crucial for maintaining the reliability and timeliness of logistics services. Technological advancements, while offering opportunities for optimization, also contribute to challenges within logistics services. The integration of technologies such as Internet of Things (IoT) devices and artificial intelligence introduces complexities in terms of implementation and adaptation. The literature suggests that e-commerce platforms need to grapple with challenges related to technology integration, requiring substantial investments and adjustments in operational processes (Ivanov et al., 2020).

The growth of e-commerce and evolving consumer expectations further intensify the relationship between logistics services and challenges. As highlighted by Kim et al. (2020), the surge in online shopping has transformed customer expectations, necessitating faster and more transparent logistics services. Meeting these heightened expectations poses challenges in areas such as last-mile delivery, inventory management, and order fulfillment. E-commerce platforms must navigate these challenges to provide a satisfactory customer experience. Additionally, sustainability and environmental concerns add another layer of challenges to logistics services. The literature stresses the importance of adopting eco-friendly practices in logistics operations, such as optimizing transportation routes and reducing carbon footprints (Ivanov et al.,2020). Striking a balance between sustainability and operational efficiency poses a challenge for e-commerce platforms seeking to align with environmentally conscious practices. In essence, the literature supports the notion that the relationship between Logistics Service and Challenges is intrinsic to the nature of e-commerce platforms. Navigating these challenges requires a strategic and holistic approach that considers global supply chain complexities, technological integration, consumer expectations, and environmental sustainability. E-commerce platforms must proactively address these challenges to ensure the seamless functioning of logistics services and, consequently, the overall success of their operations.

Moving to the Economy and Challenges Relationship, there are again strong positive correlations with Cultural Differences ($\rho = 0.637$), Network Security ($\rho = 0.743$), and Market Research ($\rho = 0.694$). This signifies that an economical logistics system is linked to mitigating challenges related to cultural differences, ensuring network security, and conducting market research. For "Taobao," this suggests that optimizing the economic aspects of logistics services can positively influence its ability to navigate challenges in these critical areas (Nuruzzaman et al., 2021).

Analyzing the Timeliness and Challenges Relationship reinforces the robust connections. The highly significant positive correlations (ρ -values) across Cultural Differences ($\rho = 0.734$), Network Security ($\rho = 0.718$), and Market Research ($\rho = 0.800$) indicate that an improvement in the timeliness of logistics services is associated with a substantial reduction in challenges related to cultural differences, network security, and market research (Campisi et al., 2023). This underscores the strategic importance for "Taobao" to prioritize and enhance the timeliness of its logistics operations to effectively tackle these challenges.

Table 6 highlights the intricate correlations between different dimensions of Logistics Services and Challenges in cross-border e-commerce. The findings underscore the strategic imperative for "Taobao" to focus on improving the reliability, economy, and timeliness of its logistics services to address and mitigate challenges related to cultural differences, network security, and market research, contributing to a more seamless and efficient cross-border trade

environment. Table 6, which illustrates the relationship between Logistics Service and Challenges, provides valuable insights for understanding the dynamics within the context of "Taobao" and its cross-border e-commerce operations. The correlations revealed in the table offer practical implications for "Taobao" in optimizing its logistics services to effectively navigate and overcome specific challenges (Sheikh et al., 2015). The highly significant positive correlations between reliability, economy, and timeliness of logistics services with challenges related to cultural differences, network security, and market research suggest strategic avenues for improvement.

Firstly, focusing on enhancing the reliability of logistics services can significantly alleviate challenges associated with cultural differences, network security, and market research. By ensuring that the goods are consistently delivered as expected, "Taobao" can build trust among users and mitigate challenges arising from cultural disparities (Cárdenas et al., 2017). Secondly, the positive correlations between the economy of logistics services and challenges highlight the importance of cost-effectiveness. "Taobao" can strategically manage costs to address challenges related to cultural differences, network security, and market research. This could involve optimizing logistics processes, negotiating favorable terms with service providers, and implementing efficient cost structures. Thirdly, the table emphasizes the critical role of timeliness in mitigating challenges. Improving the speed and punctuality of logistics services can contribute to overcoming obstacles posed by cultural differences, network security concerns, and the need for extensive market research (Shi, 2022). Timely delivery and information updates can enhance user satisfaction and trust.

In essence, the insights from this table underscore the interconnected nature of logistics services and challenges in cross-border e-commerce. For "Taobao," strategic improvements in the reliability, economy, and timeliness of logistics operations can serve as key levers for addressing and minimizing challenges, ultimately contributing to a more resilient and competitive cross-border e-commerce platform (Sheikh et al., 2015).

Framework for Cross-border E-commerce

The framework is a structured conceptual framework that delineates the major components of a research study focused on cross-border e-commerce. It serves as a visual abstract, encapsulating the core facets of the investigation within a simple and professional binary color scheme. The rise of cross-border e-commerce has fostered a strong and significant relationship with logistics services and the challenges faced by online platforms (Kim et al., 2021).

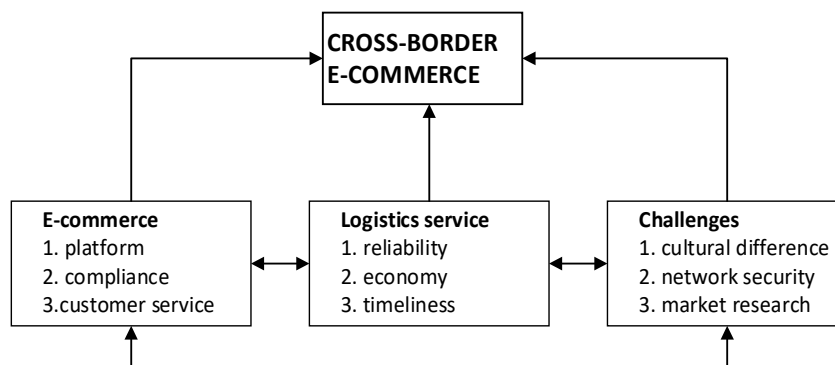


Figure 1. Framework for Cross-border E-commerce

Cross-border logistics present unique complexities compared to domestic operations. Longer distances, multiple handling points, and varying customs regulations across countries increase the potential for delays, damage, and cost inefficiencies (Wu et al., 2020). These challenges directly translate into negative consequences for online platforms. Customer dissatisfaction with delayed deliveries, lost packages, or lack of tracking information can lead to lost sales and damage the platform's reputation (Li et al., 2020). Additionally, high shipping costs associated with cross-border logistics can hinder seller competitiveness in the online marketplace (Li et al., 2022).

Furthermore, online platforms face distinct challenges in managing cross-border logistics. Moreover, the need

for secure data transmission across borders necessitates robust cybersecurity measures throughout the entire supply chain (Khan et al., 2023). Addressing the interconnected challenges between cross-border e-commerce, logistics services, and online platforms is crucial for success in this dynamic market. By prioritizing efficient, reliable, and cost-effective logistics solutions, online platforms can create a seamless customer experience, empower sellers to compete effectively, and ultimately solidify their position in the thriving world of cross-border e-commerce. Collectively, the framework conveys the interrelated nature of these three variables, emphasizing that each component is not isolated but part of a comprehensive network of factors that influence and shape the cross-border e-commerce landscape. The visual representation is not only informative but also indicative of the study's scope, covering a broad spectrum of operational, strategic, and contextual factors that define and determine the success of cross-border e-commerce platforms like Taobao.

4. Conclusions and recommendations

The respondents have moderate agreement that the key factors for success in cross-border e-commerce are choosing the right platform, complying with all applicable regulations, and providing excellent customer service. The respondents agreed that the key factors for success in logistics service are reliability, economy, and timeliness. Respondents have moderately agreed that the key challenges in cross-border e-commerce are cultural differences, network security, and market research. There are significant relationships between cross border e-commerce and logistics service, E-commerce platform and challenges and logistics services and challenges. An efficiency framework was developed for cross-border e-commerce

The Marketing staff may conduct thorough market research to understand the local culture, consumer preferences, and regulatory environment. The logistics manager may choose a reliable logistics partner that has experience in handling cross-border shipments and can provide competitive rates and accurate tracking information. The customer service team maybe trained to handle cross-border inquiries and provide prompt and helpful support in multiple languages. The efficiency framework may be utilized to e-commerce companies to improve the cross-border e-commerce operations and gain a competitive advantage in the global marketplace. Future researchers may undergo related or follow up studies with emphasis on other variables not included in this study.

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