

# A Conceptual Analysis of Logistics Service Quality Challenges in Cross-Border Drop-shipping

Kong Xin, Theresa Char Fei Ho\*

Azman Hashim International Business School, Universiti Teknologi Malaysia, Jalan Sultan

Yahya Petra, 54100 Kuala Lumpur, Malaysia

Email: kongxin@graduate.utm.my

\*Corresponding Author Email: hctheresa@utm.my

DOI Link: <http://dx.doi.org/10.6007/IJARBS/v15-i10/26549>

**Published Date:** 02 October 2025

## Abstract

The rise of cross-border e-commerce (CBEC) has accelerated the adoption of drop-shipping as a preferred fulfillment model among small and medium-sized enterprises (SMEs), enabling global market access with minimal inventory costs. However, decentralization of control in drop-shipping creates significant logistics service quality (LSQ) challenges, particularly in cross-border contexts where fulfillment processes are fragmented across retailers, suppliers, and third-party logistics providers (3PLs). This study applies the LSQ framework to conceptually analyze six critical dimensions: information quality, order accuracy, timeliness, flexibility, communication, and security, within the drop-shipping fulfillment chain. The findings reveal that LSQ issues are rooted not only in operational gaps but also in governance deficiencies that undermine accountability and service consistency. To address these challenges, the study proposes strategic pathways for resource-constrained retailers, including leveraging platform-mediated fulfillment services, adopting lightweight digital tools for improved visibility and communication, and forming selective supplier partnerships.

**Keywords:** Cross-Border e-Commerce (CBEC), Drop-shipping, Logistics Service Quality (LSQ), Small and Medium-Sized Enterprises (SMEs)

## 1. Introduction

The rise of cross-border e-commerce (CBEC) has dramatically reshaped global retail by enabling small and medium-sized enterprises (SMEs) to access international markets without the need for physical stores or overseas inventory. Among the various fulfillment models supporting this transformation, drop-shipping has emerged as a particularly attractive option for retailers. By reducing inventory and operating costs and supporting global fulfillment, drop-shipping offers a model for online retailers (Mostarac et al., 2020). Under the drop-shipping model, retailers list products on e-commerce platforms but delegate inventory storage, packaging, and shipping responsibilities to third-party suppliers. This fulfillment approach is now widely adopted across platforms such as TikTok Shop, Shopee, and

AliExpress, where cross-border drop-shipping enables millions of retailers to reach buyers around the world with minimal capital investment.

While this model offers significant operational advantages, it also introduces challenges related to fulfillment control and service quality. In particular, drop-shipping reduces the burden of logistics on retailers but simultaneously introduces new complexities. Drop-shipping leads to reduced control over fulfillment processes, particularly as inventory and delivery are managed by third parties (Laseinde & Aigbavboa, 2023). This “fulfillment disconnection” becomes even more evident in cross-border settings, where international shipping delays, customs procedures, and platform-specific logistics constraints can significantly affect customer experience. In many cases, the retailer acts more as a marketing intermediary than as a fulfillment manager, leading to growing concerns over service quality reliability.

To analyze these challenges, this study adopts the logistics service quality (LSQ) framework as a theoretical lens. Recent studies have identified several key dimensions of the LSQ, including timeliness, safety, reliability, economy, personnel contact quality, and information quality (Zhang et al., 2023). By applying LSQ to the context of cross-border drop-shipping, this study seeks to conceptually unpack the risks and gaps inherent in outsourced fulfillment chains, especially where retailer control is limited and accountability is diffused across multiple actors. The goal is to provide a structured analysis of how fulfillment fragmentation impacts service quality and to lay the foundation for future research on improving logistics governance in digital platform ecosystems.

This study is motivated by the increasing dependence of SMEs on cross-border drop-shipping to reach international markets with limited resources, despite persistent concerns over logistics performance and governance. The main contribution of the study is to introduce the LSQ framework into this context and demonstrate its applicability in identifying critical risks across fragmented fulfillment stages. By linking these theoretical dimensions to practical challenges, the study not only advances academic discussions on logistics service quality but also provides actionable insights for SMEs seeking to strengthen their operational resilience.

## **Literature Review**

### *Drop-Shipping*

Drop-shipping refers to a retail fulfillment method in which goods are shipped directly from suppliers to customers without being held in the retailer's warehouse or store (Dimitrov et al., 2023). Unlike traditional retail models, where retailers maintain physical inventory and manage shipping operations internally, drop-shipping allows retailers to list products online while outsourcing inventory management and delivery to third-party suppliers. Drop-shipping offers several strategic advantages, including minimal upfront investment, the ability to offer a wide variety of products, and access to international markets (Dimitrov et al., 2023). It is also recognized for enabling positive cash flow, operational flexibility regardless of location, adaptability to demand fluctuations, and the potential for private labeling, positioning it as an attractive model for e-commerce businesses (Menaouer et al., 2021). Furthermore, drop-shipping allows retailers to significantly expand their product assortment and reduce inventory-related costs through centralized fulfillment and the risk-pooling effect (Sodero et al., 2021).

These characteristics have contributed to the adoption of drop-shipping across diverse industries including seasonal product retailing (Sodero et al., 2021), pharmaceutical supply chains enhanced by machine learning (Detwal et al., 2023), and general e-commerce optimization (Singh et al., 2018). This model is particularly suited for CBEC, where retailers can connect with international buyers without establishing local warehouses or handling complex export procedures themselves. As a result, drop-shipping has become a widespread practice on digital platforms that support international logistics integration. Platforms such as TikTok Shop and AliExpress offer integrated support for cross-border fulfillment, enabling retailers to manage listings, pricing, and orders, while the end-to-end delivery process is handled by upstream suppliers and third-party logistics providers.

Despite its strategic benefits and growing popularity, the drop-shipping model is not without limitations. A central issue is the retailer's lack of control over inventory, fulfillment, and delivery processes (Dennis et al., 2017; Shi et al., 2020), which can lead to stockouts, delayed shipments, and inconsistent service quality. This is because drop-shipping retailers do not manage inventory themselves and are entirely dependent on suppliers for timely order fulfillment, making them vulnerable to upstream disruptions. This is especially problematic in CBEC, where longer transit times and limited supply chain visibility can further worsen fulfillment issues. Moreover, the drop-shipping model presents additional challenges, including order fragmentation, communication gaps between supply chain partners, reduced profit margins, and extended lead times (Mostarac et al., 2020). These issues can significantly compromise the reliability and efficiency of cross-border operations, making it difficult for retailers to meet customer expectations in terms of delivery speed, consistency, and service coordination. As a result, some retailers prefer traditional warehousing models despite higher costs, as they offer greater control over logistics and customer experience.

#### *Logistics Service Quality (LSQ)*

Logistics service quality (LSQ) refers to the capability of delivering the right service and product to the right customer at the right time, in the right place, at the right price, and in the right manner (Zhang et al., 2023). It reflects not only operational efficiency but also the ability to meet evolving customer expectations across the logistics process. LSQ has been widely recognized as a strategic tool for enhancing firm competitiveness (Korucuk et al., 2024; Ali et al., 2022). High LSQ performance ensures reliable, timely, and customer-focused logistics operations, which are essential for meeting rising consumer expectations in global markets. In addition to its direct impact on satisfaction, LSQ has also been found to positively influence customer re-use intention, with customer satisfaction acting as a key mediating factor (Lin et al., 2023). Given the reliance on external partners and limited process control in models such as drop-shipping, ensuring high logistics service quality becomes particularly critical.

It has been widely conceptualized as a multidimensional construct that reflects customer expectations across different stages of the fulfillment process. One foundational study identifies nine dimensions of LSQ, including personnel contact quality, order release quantities, information quality, ordering procedures, order accuracy, order condition, order quality, order discrepancy handling, and timeliness (Mentzer et al., 2001). Subsequent research assessing logistics service quality highlights four evaluation components: product availability and quality, reliability and flexibility, consumer service, and company reputation (Kolodzieva et al., 2022). A study on cross-border e-commerce reveals six relevant

dimensions: timeliness, safety, reliability, economy, personnel contact quality, and information quality (Zhang et al., 2023). Another study focusing on e-logistics highlights four key service attributes: timeliness, availability, condition, and return (Vu et al., 2025). Given the fragmentation and multi-actor structure of drop-shipping fulfillment chains, LSQ evaluation must consider service quality at each interface, between seller, platform, logistics provider, and customer.

Drawing on a synthesis of the above literature and the operational challenges observed in cross-border drop-shipping, this study focuses on six LSQ dimensions that are both frequently cited and practically relevant: information quality, order accuracy, timeliness, flexibility, communication, and security (Mentzer et al., 2001; Kolodzieva et al., 2022; Zhang et al., 2023; Vu et al., 2025). These six dimensions were selected based on their recurring presence in prior LSQ research and their direct relevance to drop-shipping operations, particularly in addressing visibility gaps, coordination failures, and cross-border risks.

Specifically, information quality refers to the accuracy, relevance, and timeliness of logistics-related updates shared with customers, such as tracking data and delivery status. Order accuracy captures whether the correct items, in the right specifications and quantities, are delivered as promised. Timeliness assesses the punctuality of the delivery process relative to customer expectations and promised timelines. Flexibility reflects the logistics provider's or retailer's ability to accommodate changes, such as delivery time rescheduling or address modification. Communication refers to the clarity, responsiveness, and effectiveness of interactions between customers and service parties, especially when problems arise. Lastly, security concerns the protection of goods during transit, including safeguarding from damage, theft, or loss. These six dimensions provide a comprehensive basis for evaluating logistics performance in complex, multi-party fulfillment structures such as cross-border drop-shipping.

### *Research Gap*

While drop-shipping has been widely examined in the context of e-commerce efficiency and platform-based retailing, limited scholarly attention has been paid to the LSQ implications of this model, particularly in cross-border environments. Most existing studies focus on operational benefits or strategic adoption factors, such as cost savings (Dimitrov et al., 2023) and product assortment agility (Dimitrov et al., 2023), with relatively few addressing the quality of service delivery experienced by end customers. Furthermore, although LSQ has been extensively studied across general logistics and e-commerce settings, the unique characteristics of cross-border drop-shipping, such as supplier heterogeneity, third-party logistics reliance, and interface fragmentation, have not been systematically examined through the LSQ lens.

Current LSQ frameworks often assume a centralized, integrated logistics system where the retailer retains control over fulfillment, which may not hold true in the distributed and loosely coordinated structure of drop-shipping. As a result, there is a theoretical and practical gap in understanding how LSQ dimensions apply, interact, and potentially break down across the decentralized fulfillment chain in CBEC. This study addresses this gap by applying a refined LSQ framework to analyze logistics service quality challenges in cross-border drop-shipping

environments. It maps specific dimensions to fulfillment stages and identifying where service breakdowns are most likely to occur.

By extending LSQ analysis to the context of fragmented, multi-actor fulfillment structures, this study contributes to a more nuanced understanding of service quality dynamics in digital trade. The proposed framework offers a structured way to assess logistics performance under limited retailer control, thereby enhancing the theoretical relevance of LSQ in decentralized e-commerce systems. From a practical standpoint, the findings can help CBEC retailers, platforms, and logistics providers identify weak links in their fulfillment chain and design targeted service improvements.

### **Methodology**

This study employs a conceptual research design, which emphasizes theoretical development rather than empirical testing. This design is based on the exploratory nature of the research objective, which is to identify and map the LSQ challenges within cross-border drop-shipping. Conceptual research is particularly appropriate when the phenomenon under investigation is relatively new, fragmented across multiple stakeholders, and lacks an established body of empirical evidence. By situating the study within the broader tradition of framework-building in logistics and supply chain management research, the methodology ensures that the analysis contributes primarily to theory generation rather than hypothesis validation.

The literature that informs this study was gathered systematically from reputable databases such as Scopus, Web of Science, and Google Scholar. Keywords including “cross-border e-commerce,” “drop-shipping,” “logistics service quality,” “third-party logistics,” and “fulfillment challenges” were used to identify relevant sources. To capture both foundational theories and emerging perspectives, the search emphasized peer-reviewed journal articles published within the last ten years, while also incorporating a few seminal works that remain highly cited in LSQ and e-commerce research. Sources were reviewed for their relevance, conceptual clarity, and applicability to the drop-shipping fulfillment context.

As with all conceptual research, the methodology has inherent limitations. The absence of empirical testing means that the framework cannot yet be generalized or statistically validated. However, this limitation is also a strength in exploratory contexts, as it allows for flexibility in theorization and the identification of novel research directions. The framework developed here is intended as a foundation for future empirical studies, offering measurable constructs and performance indicators that researchers can operationalize in surveys, interviews, or case studies. In this way, the conceptual methodology not only advances theoretical understanding but also provides a road map for subsequent validation and practical application in CBEC logistics.

### **Conceptual Framework**

#### *Fulfillment Stages in Drop-shipping*

A clear understanding of the fulfillment structure is essential for analyzing LSQ within the context of cross-border drop-shipping. Unlike traditional retail logistics, drop-shipping operates as a fragmented, multi-party system in which the retailer neither holds inventory nor directly manages shipping, but instead coordinates remotely with suppliers and logistics providers. This structure creates multiple points of vulnerability across the fulfillment journey.

As illustrated in Figure 1, the drop-shipping fulfillment process can be divided into five interrelated stages. This five-stage sequence reflects the typical operational flow in cross-border drop-shipping. The process begins with Product Listing, where the retailer uploads product information and sets prices on the platform. Once a buyer places an order, the system triggers Order Placement, initiating payment and fulfillment notifications. The supplier then moves to Processing and Packaging, preparing the item for shipment. After packaging, the product enters the International Shipping and Customs stage, which covers cross-border transit and regulatory procedures. Upon arrival in the destination country, Final-Mile Delivery is carried out by a local courier. Finally, after the product reaches the customer, the Feedback and Returns stage allows buyers to report issues or request refunds. Each stage involves a different actor and introduces distinct logistics risks and quality concerns.



Figure 1. Fulfillment Stages in Cross-Border Drop-Shipping

#### *Mapping LSQ Dimensions*

A structured assessment of logistics service quality in cross-border drop-shipping requires linking specific LSQ dimensions to distinct stages of the fulfillment process. As illustrated in Figure 1, the drop-shipping journey consists of multiple handover points involving different actors, each with its own potential for service degradation. This section maps six critical LSQ dimensions, information quality, order accuracy, timeliness, flexibility, communication, and security, onto the five-stage fulfillment structure. It helps identify the most vulnerable interfaces within fragmented fulfillment chains and offers a process-based lens for analyzing service failures in global drop-shipping operations.

Table 1

*Mapping of LSQ Dimensions Across Drop-Shipping Fulfillment Stages*

Fulfillment Stage	Key Actors	Relevant LSQ Dimensions	Common Risks / Issues
Product Listing & Order Placement	Retailer, Platform	Information Quality	Misinformation, Outdated stock data, Delivery inaccuracy
Supplier Processing & Packaging	Supplier	Order Accuracy, Timeliness, Communication	Wrong items, Packaging errors, Processing delays, Poor communication
International Shipping & Customs	Third-Party Logistics, Customs Authorities	Timeliness, Security	Customs delays, Document errors, Parcel damage, Parcel loss
Final-Mile Delivery	Local Courier	Timeliness, Security	Late delivery, Damaged items, Poor handling
Customer Feedback & Returns	Customer, Retailer, Platform	Communication, Flexibility, Security	Return difficulty, Poor after-sales response, Unclear policies

In the Product Listing & Order Placement stage, information quality constitutes a critical concern. Customers rely on product descriptions, delivery estimates, and stock availability displayed on the platform when making purchase decisions. These data points often come from third-party suppliers, which can lead to delays or failures in updating stock levels or shipping information. For example, incorrect shipping times or estimated arrival dates may be displayed on the platform, leading to misinformation.

The Supplier Processing & Packaging stage introduces vulnerabilities in order accuracy, timeliness, and communication. Inaccurate picking, poor packaging, or delayed processing can trigger a negative service experience before the product ships. Additionally, communication failures between supplier and retailer or between retailer and customer often prevent timely resolution of processing issues.

The International Shipping & Customs stage is typically opaque. Goods are transferred across borders via third-party logistics providers and must undergo customs clearance. Here, timeliness and security are particularly vulnerable. Delays due to inspections or documentation errors, along with risks of damage or loss during transit, are common yet difficult for retailers to predict or control.

In the Final-Mile Delivery stage, two key logistics service quality issues are especially common: timeliness and security. Customers may experience late deliveries or uncertain arrival times, which reduce punctuality and create dissatisfaction. In addition, damaged parcels or signs of poor handling during last-mile transit reflect weaknesses in service security. These problems directly influence how customers perceive the overall reliability of cross-border drop-shipping.

Lastly, the Customer Feedback & Returns stage highlights risks in communication, security, and flexibility. The return process in cross-border settings is often complex, costly, and unstructured. Limited support for reverse logistics, unclear refund policies, or inadequate after-sales communication further deteriorate service satisfaction, even when the initial delivery was successful.

*Framework Visualization*

This study develops a conceptual framework, as shown in Figure 2, to provide a structured understanding of how logistics service quality (LSQ) challenges unfold across the drop-shipping fulfillment chain. The framework visually maps six key LSQ dimensions, including Information Quality, Order Accuracy, Timeliness, Flexibility, Communication, and Security, to their corresponding service risks and measurable performance indicators. By tracing how these dimensions influence customer experience, the framework aims to support the diagnosis and improvement of LSQ in decentralized cross-border drop-shipping environments.

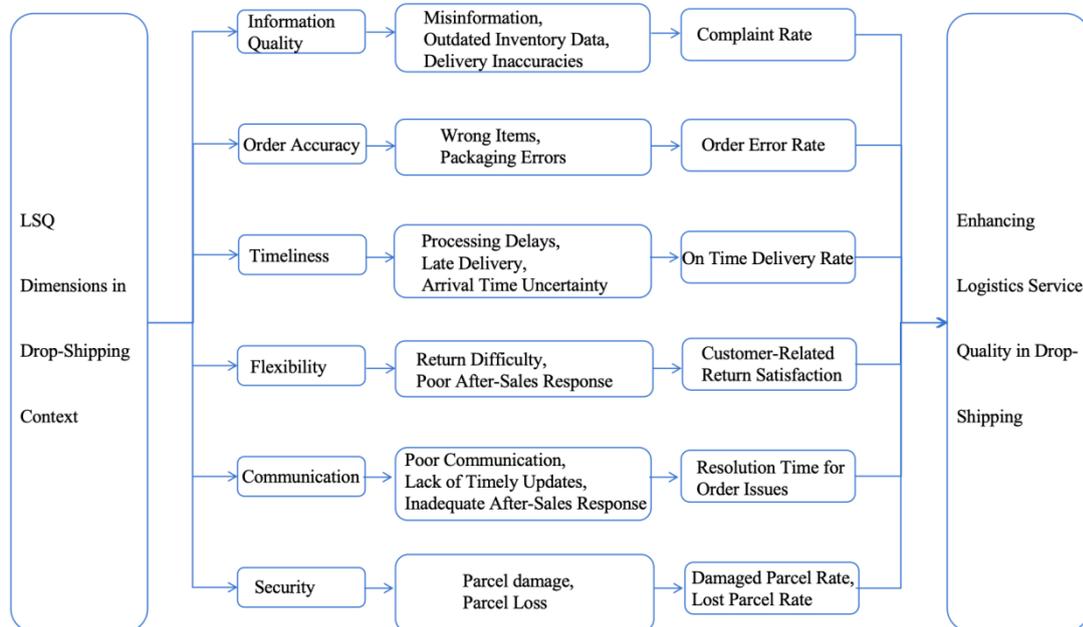


Figure 2. Conceptual Framework

It is important to note that while the conceptual framework maps major logistics service quality (LSQ) issues across the drop-shipping fulfillment process, not all risks are within the retailer’s scope of control. Specific external factors such as unclear platform return policies, parcel loss during international transit, and poor handling by third-party couriers are recognized as critical risks but are largely governed by external actors like logistics providers or platform administrators. Given their limited controllability from the retailer’s end, these factors are excluded from the core improvement logic of the framework, though their potential impact on customer satisfaction is acknowledged in the analysis.

Information Quality problems in drop-shipping typically manifest through three main issues: misinformation, outdated inventory data, and delivery inaccuracies. Misinformation refers to incorrect or misleading product descriptions, such as wrong specifications, false shipping durations, or misrepresented product functions. Outdated inventory data occur when items listed as “available” are actually out of stock, leading to canceled or delayed orders. Delivery

inaccuracies, such as incorrect shipping times or estimated arrival dates, often stem from the supplier's failure to synchronize data with the platform. These issues collectively disrupt customer expectations and reduce trust in the retailer. The complaint rate serves as a key performance metric to capture the effects of such information failures. A higher complaint rate indicates a higher incidence of customer dissatisfaction caused by information mismatches, and thus reflects poor performance in information quality. By tracking this rate and analyzing the root causes behind customer grievances, retailers and platforms can identify which informational aspects require tighter control and transparency to improve service quality in drop-shipping logistics.

Order accuracy issues in drop-shipping are often reflected through incorrect items, wrong specifications, and packaging mismatches. These errors typically originate at the supplier's processing and packaging stage, where the retailer has limited oversight. Common problems include shipping the wrong product variant, missing items in multi-unit orders, or mislabeling goods due to rushed or inconsistent quality checks. Such inaccuracies directly frustrate customers and frequently result in product returns, refund requests, or negative feedback. The order error rate serves as the key performance metric for this dimension, measuring the percentage of shipments with discrepancies between the ordered and delivered items. A high error rate indicates a breakdown in supplier operational control or poor coordination between order systems and fulfillment teams. Monitoring this metric helps retailers identify suppliers with recurring fulfillment issues and incentivize improvements through standardized packing protocols and quality assurance mechanisms.

Timeliness in logistics refers to the ability to deliver goods within the promised time frame. In cross-border drop-shipping, delays may occur during supplier processing, international shipping, customs clearance, or last-mile delivery. Specific risks include processing delays, late delivery and arrival time uncertainty. These disruptions create uncertainty and dissatisfaction among customers, especially when there is a mismatch between expected and actual delivery dates. The on-time delivery rate is used to quantify timeliness, capturing the proportion of orders delivered within the expected delivery window. A declining on-time rate signals growing inefficiencies or risks within the logistics chain and can severely damage customer trust. By analyzing this metric across suppliers and regions, drop-shipping retailers can identify patterns of delay and adjust estimated delivery times or restructure logistics partnerships accordingly.

Flexibility in logistics service quality refers to the system's responsiveness to changes in customer needs or fulfillment conditions. In drop-shipping, common flexibility-related challenges include return difficulty and Poor after-sales response. These issues often stem from rigid supplier systems, platform limitations. Customers who face inflexible return policies or denied order modifications typically express frustration and are less likely to repurchase. Customer-related return satisfaction reflects how satisfied customers are with post-order processes such as return handling, refund processing, and exchange resolution. It is typically measured through customer feedback, rating scores, complaint records, or repeat purchase behavior. A low return satisfaction rate suggests inflexible service frameworks and poor adaptability to customer needs. Enhancing this aspect of service requires platforms and suppliers to implement more customer-friendly return mechanisms and responsive support

systems, especially in the context of cross-border drop-shipping where service rigidity is common.

Communication quality in drop-shipping refers to the clarity, responsiveness, and consistency of interactions between customers and service providers throughout the logistics process. Three common communication failures are frequently observed. First, poor communication arises when customers receive generic or incomplete responses from retailers or platforms, especially in multi-party fulfillment settings. Second, lack of timely updates is common when order status, shipment progress, or delay notifications are not proactively shared with customers, leaving them uncertain about their delivery. Third, inadequate after-sales response reflects the failure to resolve post-delivery issues, such as refund requests or return coordination, within an acceptable time frame. To measure performance in this dimension, this study adopts resolution time for order issue. A longer resolution time indicates fragmented communication channels, delayed feedback loops between retailers and suppliers, and under-resourced customer service support. Improving this metric requires investment in integrated communication platforms, faster escalation protocols, and more transparent status reporting mechanisms to ensure customers receive accurate and timely assistance during and after fulfillment.

Security in logistics refers to the safe handling and protection of goods during transit. In drop-shipping, products are vulnerable to damage, theft, or loss at multiple stages, particularly during cross-border shipping and last-mile delivery by third-party carriers. These issues compromise customer satisfaction and generate financial losses through refund claims and reshipments. Two performance indicators are used to assess logistics security, including the damaged parcel rate and the lost parcel rate. A high damaged parcel rate signals insufficient packaging standards or rough handling, while a high lost parcel rate points to tracking failures or systemic weaknesses in the delivery chain. Regularly monitoring these rates helps identify weak logistics links and enables the implementation of targeted protective measures such as improved packaging protocols, GPS tracking, or courier accountability systems.

## **Discussion**

### *From Operational Gaps to Governance Dilemmas*

The challenges identified in the previous sections demonstrate that LSQ issues in cross-border drop-shipping are not simply operational shortcomings but stem from structural and governance deficiencies. The drop-shipping model decentralizes control across retailers, suppliers, and third-party logistics providers, resulting in fragmented accountability. Retailers, often SMEs, lack the contractual power or technological infrastructure to enforce service standards, while suppliers and 3PLs are incentivized to optimize their own operations rather than the end-to-end customer experience. This structural misalignment leads to persistent issues in timeliness, information transparency, and order accuracy, which directly undermine customer satisfaction and retention. Therefore, improving LSQ requires more than incremental process enhancements. It necessitates systemic governance mechanisms that realign incentives and establish shared accountability across the fulfillment chain.

### *Strategic Pathways for Improvement in Resource-Constrained Contexts*

Resource-constrained drop-shipping retailers may adopt several pragmatic strategies that avoid heavy investments or direct control to address these governance dilemmas. One critical

approach involves leveraging the governance infrastructure already embedded within e-commerce platforms. Platforms such as Shopee, TikTok Shop, and Shopify increasingly offer standardized fulfillment services, integrating warehousing, delivery, and tracking systems, that reduce service variability. By aligning with suppliers who participate in these programs, retailers can benefit from more reliable logistics without needing to establish independent networks. Additionally, stricter platform-level supplier vetting policies can reduce exposure to unreliable partners, which directly supports improvements in metrics such as the order error rate and on-time delivery rate identified in the conceptual framework.

Beyond platform reliance, retailers can utilize lightweight digital tools to enhance their service responsiveness. While full-scale digitalization is often unrealistic, affordable solutions such as order management plugins, free inventory trackers, or logistics aggregator services (e.g., YunExpress, Cainiao) provide basic shipment visibility and allow proactive customer communication. These tools help close information gaps and mitigate the effects of logistics disruptions on customer satisfaction. As these systems are adopted, retailers can monitor the complaint rate and resolution time for order issues to evaluate whether their communication quality and information accuracy are improving.

Finally, soft governance strategies, including customer expectation management and selective supplier partnerships, play a crucial role in improving perceived LSQ. Proactively communicating potential delays, setting transparent delivery timelines, and offering clear refund policies can build trust even in the face of systemic limitations. Retailers can also rely on informal vetting of suppliers, using historical performance data and customer reviews to prioritize partnerships with consistent service records. Tracking the customer-related return satisfaction rate and lost parcel rate provides insight into how well these relational tactics are mitigating the impact of fulfillment uncertainties.

### **Contributions to Theory and Practice**

This study contributes to the theoretical understanding of LSQ in the context of decentralized fulfillment models by highlighting the importance of governance structures over mere operational optimization. Unlike traditional logistics frameworks that assume centralized control, drop-shipping requires adaptive mechanisms to manage quality across independent actors. Practically, the findings suggest that SMEs must prioritize strategic partnerships and leverage platform-mediated governance tools to mitigate for their lack of direct control. Policymakers and platform operators are also urged to consider regulatory guidelines and infrastructural support for SMEs in CBEC, as this sector continues to grow in scale and complexity.

### **Conclusion**

This study examined LSQ challenges inherent in cross-border drop-shipping, a fulfillment model increasingly adopted by SMEs for its low capital requirements and global reach. By applying the LSQ framework, six critical dimensions, information quality, order accuracy, timeliness, flexibility, communication, and security, were mapped to the fragmented fulfillment stages typical of drop-shipping operations. The analysis uncovered persistent service quality risks arising from decentralized control, fragmented accountability, and limited retailer oversight, which collectively compromise customer satisfaction and trust.

The discussion further emphasized that addressing these challenges requires governance-oriented solutions rather than incremental operational improvements. Resource-constrained retailers can mitigate LSQ gaps by leveraging platform-mediated fulfillment services, adopting lightweight digital tools for shipment visibility and customer communication, and establishing selective supplier partnerships based on historical performance. Such strategies align with key performance metrics identified in the framework, including complaint rates, on-time delivery rates, and return satisfaction levels, offering practical pathways for SMEs to enhance service quality without significant resource investments.

This study contributes to the theoretical understanding of LSQ in decentralized e-commerce ecosystems by highlighting the need for adaptive governance mechanisms across independent actors. Practically, it provides SMEs with actionable strategies for navigating service quality risks in drop-shipping environments. Future research could empirically validate the proposed framework across diverse platforms and countries. It could also examine the role of platform-level regulations in improving LSQ. Additionally, technological innovations, such as AI-driven logistics orchestration, could be explored in the context of cross-border e-commerce. As global digital marketplaces continue to evolve, ensuring robust LSQ will be essential for sustaining the viability and competitiveness of drop-shipping models.

### **Declarations**

All authors declare that they have no conflicts of interest. This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors. No studies involving human participants were conducted, thus informed consent was not applicable.

### **References**

- Ali, A. H., Gruchmann, T., & Melkonyan, A. (2022). Assessing the impact of sustainable logistics service quality on relationship quality: Survey-based evidence in Egypt. *Cleaner Logistics and Supply Chain*, 4, 100036.
- Detwal, P. K., Soni, G., Jakhar, S. K., Srivastava, D. K., Madaan, J., & Kayikci, Y. (2023). Machine learning-based technique for predicting vendor incoterm (contract) in global omnichannel pharmaceutical supply chain. *Journal of Business Research*, 158, 113688.
- Dennis, Z. Y., Cheong, T., & Sun, D. (2017). Impact of supply chain power and drop-shipping on a manufacturer's optimal distribution channel strategy. *European Journal of Operational Research*, 259(2), 554-563.
- Dimitrov, I., Koprinkova-Noncheva, N., & Dimitrova, A. (2023). Key factors and conditions for implementing the drop-shipping method as an alternative to traditional supply chain. *Entrepreneurship and Sustainability Issues*, 11(2), 498-515.
- Kolodzieva, T., Zhelezniakova, E., Melnykova, K., Pysmak, V., & Kolodziev, O. (2022). Assessment of logistics service quality based on the application of fuzzy methods modeling. *Problems and Perspectives in Management*, 20(3), 552.
- Korucuk, S., Aytakin, A., & Moslem, S. (2024). A novel interval-valued-q-rung orthopair fuzzy-additive ratio assessment model for evaluating logistics service quality. *IEEE Access*, 12, 55726-55743.
- Laseinde, O., & Aigbavboa, C. (2023). Exploring the effectiveness of Collaborative Planning, Forecasting and Replenishment (CPFR) in enhancing supply chain performance in drop shipping. *Production Management and Process Control*, 104.

- Lin, X., Mamun, A. A., Yang, Q., & Masukujjaman, M. (2023). Examining the effect of logistics service quality on customer satisfaction and re-use intention. *PloS one*, 18(5).
- Menaouer, B., Khalissa, S., Belayachi, M. E. A., & Amine, B. (2021). The role of drop shipping in e-commerce: the Algerian case. *International Journal of E-Business Research (IJEER)*, 17(4), 1-19.
- Mentzer, J. T., Flint, D. J., & Hult, G. T. M. (2001). Logistics service quality as a segment-customized process. *Journal of marketing*, 65(4), 82-104.
- Mostarac, K., Kavran, Z., & Piskovic, J. L. (2020). Dropshipping distribution model in supply chain management. *Annals of DAAAM & Proceedings*, 31.
- Shi, S., Sun, J., & Cheng, T. C. E. (2020). Wholesale or drop-shipping: Contract choices of the online retailer and the manufacturer in a dual-channel supply chain. *International Journal of Production Economics*, 226, 107618.
- Singh, G., Kaur, H., & Singh, A. (2018). Dropshipping in e-commerce: A perspective. In Proceedings of the 2018 9th International Conference on E-business, *Management and Economics*.
- Sodero, A. C., Namin, A., Gauri, D. K., & Bhaskaran, S. R. (2021). The strategic drivers of dropshipping and retail store sales for seasonal products. *Journal of Retailing*, 97(4), 561-581.
- Vu, T. P., & Nguyen, D. T. (2025). The links between e-logistics service quality, attitude and repurchase intention of Gen Z in e-commerce. *Journal of Trade Science*, 13(2), 87-109.
- Zhang, Y., Yuan, Y., & Su, J. (2023). Systematic investigation of the logistics service quality of cross-border e-commerce: A mixed-methods perspective. *Asia Pacific Journal of Marketing and Logistics*, 36(3), 549–564.