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POST PURCHASE SERVICE QUALITY AND CUSTOMER BEHAVIOR IN CROSS- BORDER E-COMMERCE: A PAKISTANI CONSUMER PERSPECTIVE

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Abstract
The rapid growth of cross-border e-commerce (CBEC) has transformed global retail by enabling consumers to access international markets through digital platforms. While prior research has largely focused on pre-purchase and logistical aspects, the post-purchase phase remains underexplored despite its critical role in shaping customer satisfaction and behavior. This study investigates the impact of Post-Purchase Service Quality (PPSQ) on customer behavior from a Pakistani consumer perspective. Specifically, it examines five dimensions of PPSQ—Order Tracking (OT), Easy Exchange and Return (EER), Responsive Customer Support (RCS), Product Usage Instructions (PUI), and Loyalty and Reward Programs (LRP)—and their influence on Customer Satisfaction (CS), which subsequently affects Repurchase Intention (RPI) and Electronic Word-of-Mouth (eWOM). A quantitative, cross-sectional research design was employed using a structured online questionnaire distributed among Pakistani consumers with CBEC experience. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings reveal that Order Tracking, Easy Exchange and Return, and Responsive Customer Support significantly and positively influence customer satisfaction, whereas Product Usage Instructions and Loyalty and Reward Programs do not show a significant impact. Furthermore, customer satisfaction is found to be a strong predictor of both repurchase intention and electronic word-of-mouth. The study highlights that operational reliability and effective post-purchase support are the key drivers of customer satisfaction in CBEC, particularly in emerging markets like Pakistan where perceived risk is high. These findings provide valuable theoretical contributions by extending service quality literature to the post-purchase phase and offer practical insights for e-commerce platforms to prioritize resources effectively. Overall, the research underscores the importance of enhancing post-purchase experiences to foster customer loyalty and sustainable growth in cross-border e-commerce .

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Keywords: Cross-Border E-Commerce, Post-Purchase Service Quality, Customer Satisfaction, Repurchase Intention, Electronic Word-of-Mouth, Pakistan

Introduction

The global retail landscape has undergone a profound transformation with the rapid expansion of cross-border e-commerce (CBEC), fundamentally altering how consumers access products and how businesses operate in international markets. Enabled by digital platforms, secure payment gateways, and increasingly efficient global logistics networks, CBEC allows consumers to purchase goods from foreign markets with relative ease. This shift has created significant opportunities for businesses, especially small and medium-sized enterprises, to expand beyond domestic boundaries and reach global audiences (Pan et al., 2023). The scale of this transformation is reflected in market projections, with the global CBEC market growing from approximately $780 billion in 2019 to an expected $4.8 trillion by 2026, representing an exceptional compound annual growth rate of 27.4% (Li et al., 2024). Importantly, this growth is not limited to developed economies; emerging markets such as Pakistan are increasingly participating in global e-commerce due to rising internet penetration, smartphone usage, and a growing middle-class consumer base.

Despite the impressive expansion of CBEC, much of the existing research and business focus has been concentrated on the transactional phase of e-commerce, particularly aspects such as website usability, pricing strategies, and delivery speed. However, the post-purchase phase remains relatively underexplored, even though it plays a crucial role in shaping long-term customer relationships. The post-purchase phase encompasses all customer interactions after the transaction is completed, including order tracking, returns and exchanges, customer support, product usage guidance, and loyalty initiatives. This stage is critical because it is where customer expectations are either confirmed or violated, directly influencing satisfaction and future behavior. In the context of CBEC, post-purchase service quality becomes even more significant due to the inherent uncertainties involved in international transactions, such as longer delivery times, customs procedures, language barriers, and the absence of physical interaction with sellers (Lu et al., 2023).

In domestic e-commerce, efficient post-purchase services can enhance customer satisfaction and foster loyalty, but in CBEC, these services serve an even more fundamental role by reducing perceived risk and uncertainty. For instance, accurate order tracking can alleviate anxiety during long delivery periods, while responsive customer support can address concerns related to international shipping delays or product discrepancies. Similarly, transparent return and exchange policies can mitigate the perceived risk associated with

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purchasing from foreign sellers. These factors collectively influence how consumers evaluate their overall experience and whether they are willing to engage in repeat transactions. Therefore, understanding post-purchase service quality is essential for businesses seeking to establish trust and sustain customer relationships in the global digital marketplace.

Existing literature on CBEC customer behavior has predominantly emphasized pre-purchase and logistical factors, such as price competitiveness, delivery efficiency, and platform usability (Akil & Ungan, 2021; Do et al., 2023; Chotisarn & Phuthong, 2025). While these factors are undoubtedly important, they do not fully capture the complexities of the customer journey, particularly in emerging markets where infrastructural and institutional challenges may influence consumer perceptions. A significant research gap exists in examining how specific dimensions of Post-Purchase Service Quality (PPSQ) affect customer satisfaction and subsequent behavioral outcomes in such contexts. Pakistan presents a particularly compelling case for this investigation. With one of the youngest populations globally, increasing digital adoption, and expanding participation in international online shopping, the country offers substantial potential for CBEC growth. However, Pakistani consumers also face unique challenges, including inconsistent local logistics systems, foreign exchange constraints, and heightened perceptions of risk when dealing with international sellers.

Given these dynamics, it becomes essential to explore how Pakistani consumers evaluate post-purchase services and how these evaluations influence their satisfaction and behavior. This study addresses this gap by shifting the analytical focus from general logistics service quality to specific customer-facing elements of the post-purchase experience. It examines the impact of five key dimensions of PPSQ: Order Tracking, Easy Exchange and Return, Responsive Customer Support, Product Usage Instructions, and Loyalty and Reward Programs. These dimensions represent critical touchpoints in the post-purchase journey and are expected to play varying roles in shaping customer satisfaction.

Furthermore, this study investigates how customer satisfaction, as an affective response to post-purchase experiences, influences two key behavioral outcomes: Repurchase Intention and Electronic Word-of-Mouth (eWOM). Repurchase intention reflects a customer's likelihood of engaging in future transactions with the same platform, while eWOM represents the sharing of experiences and opinions through digital channels, which can significantly influence other consumers. By analyzing these relationships within the Pakistani CBEC context, this research provides both theoretical and practical insights into how post-purchase service quality can drive customer loyalty and advocacy.

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In summary, while CBEC continues to expand rapidly, the importance of the post-purchase phase cannot be overstated, particularly in emerging markets characterized by higher uncertainty and risk. This study contributes to the existing literature by offering a focused examination of PPSQ and its impact on customer behavior in Pakistan. By identifying the most influential dimensions of post-purchase service quality, it provides valuable guidance for e-commerce platforms seeking to enhance customer satisfaction, improve retention, and build sustainable competitive advantage in an increasingly globalized digital economy

Statement of the Problem

Despite the rapid growth of cross-border e-commerce globally and in Pakistan, a significant knowledge gap exists regarding the post-purchase experience and its impact on customer loyalty. While platforms invest heavily in attracting customers, many fail to retain them due to inadequate after sales service, leading to low repurchase rates and negative online reviews. The specific problem this study addresses is the lack of empirical understanding of which post-purchase service quality dimensions are most critical for driving customer satisfaction, repurchase intention, and positive word-of-mouth among Pakistani consumers engaging in CBEC.

Existing literature has established the importance of logistics service quality but has not sufficiently disaggregated the post-purchase phase or examined its unique dynamics in a culturally distinct, emerging market like Pakistan. Consequently, CBEC platforms operating in or targeting Pakistan lack evidence-based guidance on where to allocate resources to optimize the post-purchase experience, enhance customer retention, and build sustainable competitive advantage in a high-growth but challenging market environment.

Objectives of the Study

The primary aim of this research is to examine the impact of Post-Purchase Service Quality on customer behavior in cross-border e-commerce from a Pakistani consumer perspective. This aim is operationalized through the following specific objectives:

1. To examine the impact of five key post-purchase service quality dimensions (Order Tracking, Easy Exchange & Return, Responsive Customer Support, Product Usage Instructions, and Loyalty & Reward Programs) on Customer Satisfaction in CBEC platforms.
2. To analyze the relationship between Customer Satisfaction and Repurchase Intention among Pakistani CBEC consumers.
3. To analyze the relationship between Customer Satisfaction and Electronic Word-of-Mouth (eWOM) among Pakistani CBEC consumers.
4. To determine which post-purchase service quality dimensions serve as the most significant drivers of customer satisfaction and subsequent loyalty behaviors in the Pakistani CBEC context.

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Research Questions

To achieve the above objectives, this study is guided by the following research questions:

1. How do the dimensions of Post-Purchase Service Quality (Order Tracking, Easy Exchange & Return, Responsive Customer Support, Product Usage Instructions, and Loyalty & Reward Programs) affect Customer Satisfaction on CBEC platforms in Pakistan?
2. What is the nature and strength of the relationship between Customer Satisfaction and Repurchase Intention in the context of Pakistani CBEC?
3. What is the nature and strength of the relationship between Customer Satisfaction and Electronic Word-of-Mouth (eWOM) in the context of Pakistani CBEC?

Significance of the Study

This research holds significance for both theoretical advancement and practical application:

Theoretical Significance:

- Extends Service Quality Theory: It contributes to service quality and CBEC literature by introducing and validating a focused, multi-dimensional framework for Post-Purchase Service Quality, moving beyond generic logistics constructs.
- Context-Specific Knowledge: It addresses a gap in the literature by providing empirical evidence from Pakistan, an under-researched yet strategically important emerging market, thereby enriching the understanding of how cultural and market-specific factors can change the service quality evaluations.
- Integrates Behavioral Models: It applies and tests the Stimulus-Organism-Response (S-O-R) framework in a novel context, demonstrating how post-purchase stimuli influence affective and behavioral outcomes in digital, cross-border settings.

Practical Significance:

- For CBEC Platform Managers: Provides actionable insights into which post-purchase service elements (e.g., tracking transparency vs. reward programs) should be prioritized to maximize customer satisfaction and loyalty among Pakistani consumers, enabling more efficient resource allocation.
- For Marketing and Strategy Practitioners: Offers guidance for designing culturally appropriate and effective post-purchase communication, return policies, and customer support protocols and SOP's to the Pakistani market.
- For Policymakers and Trade Bodies: Informs the development of regulations and infrastructure that can support reliable post-purchase

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services (like standardized tracking systems, streamlined customs for returns) fostering a more trustworthy CBEC ecosystem in Pakistan.

Limitations of the Study

While this study aims to provide valuable insights, its findings should be interpreted in light of the following limitations:

1. Geographic and Cultural Scope: The study focuses exclusively on Pakistani consumers. While this provides depth, the findings may not be directly generalizable to other emerging markets with different cultural, economic, or infrastructural contexts.
2. Cross-Sectional Design: The use of a survey at a single point in time captures perceptions and intentions at that moment. It cannot establish causal relationships with absolute certainty or track how perceptions evolve over time.
3. Self-Reported Data: The data relies on respondents' self-reported experiences, perceptions, and intentions, which may be subject to biases such as social desirability bias or recall inaccuracy.
4. Sample Characteristics: The sample may based on more tech-savvy, urban, and younger demographics who are active online shoppers, potentially underrepresenting the views of older or less digitally engaged consumers.

Definition of Important Terms Used

- Cross-Border E-Commerce (CBEC): The online sale of goods and services from a retailer or platform in one country to a consumer in another country.
- Post-Purchase Service Quality (PPSQ): The consumer's evaluation of the excellence and adequacy of services provided by an e-commerce platform after a transaction is completed. In this study, it is operationalized through five dimensions:
    - Order Tracking (OT): The provision of accurate, accessible, and real-time information about the status and location of a shipped order.
    - Easy Exchange and Return (EER): The perceived simplicity, clarity, and lack of hassle associated with the process of returning or exchanging a purchased product.
    - Responsive Customer Support (RCS): The perceived effectiveness, empathy, speed, and multi-channel availability of customer service agents in resolving post-purchase inquiries or issues.
    - Product Usage Instructions (PUI): The clarity, comprehensiveness, and accessibility of guidance provided on how to use, assemble, or maintain a purchased product.
    - Loyalty and Reward Programs (LRP): Structured programs offered by a platform that provide incentives, such as points, discounts, or exclusive benefits, to encourage repeat purchases.

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- Customer Satisfaction (CS): An affective state resulting from a consumer's post-purchase evaluation, where the perceived performance of the post-purchase service meets or exceeds their prior expectations.
- Repurchase Intention (RPI): A consumer's conscious plan or likelihood to buy from the same CBEC platform again in the future.

Electronic Word-of-Mouth (eWOM): The act of consumers sharing their opinions, experiences, and recommendations about a CBEC platform or its services through digital channels such as social media, review websites, forums, or messaging apps.

Literature Review

Cross-Border E-Commerce and Post-Purchase Service Quality

Cross-border e-commerce (CBEC) has emerged as a transformative force in global trade, fundamentally reshaping how consumers access products and how firms operate across international boundaries. By integrating digital platforms with international logistics systems, CBEC allows businesses to serve global markets while enabling consumers to purchase products from foreign sellers with minimal friction (Han et al., 2023a). The projected growth of the CBEC market to $4.8 trillion by 2026 highlights its economic significance and the increasing consumer shift toward global online shopping (Li et al., 2024).

However, CBEC differs significantly from domestic e-commerce due to added complexities such as extended delivery times, customs procedures, language barriers, and higher perceived risk (Lu et al., 2023; Zha et al., 2022). These factors intensify the importance of service quality beyond the point of purchase. Traditional logistics service quality models focus primarily on delivery efficiency and accuracy, but in CBEC, the post-purchase phase becomes equally, if not more, critical. Functional service quality, which includes communication, responsiveness, and problem resolution, plays a central role in reducing uncertainty and enhancing the overall customer experience (Do et al., 2023).

Therefore, while logistics service quality provides a foundational understanding, a more focused examination of Post-Purchase Service Quality (PPSQ) is necessary to capture the full range of factors influencing customer satisfaction and loyalty in cross-border contexts.

Theoretical Foundations

The literature on service quality and consumer behavior in CBEC is supported by several theoretical frameworks that explain how service experiences translate into behavioral outcomes.

Service Quality Theory, initially developed by Parasuraman, Zeithaml, and Berry (1985, 1988), conceptualizes service quality as the gap between customer expectations and perceived performance. In CBEC, this theory requires adaptation because consumer expectations are often adjusted due to

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the complexities of international transactions. Studies suggest that while factors like delivery speed may be less strictly evaluated, assurance-related elements such as tracking and support gain greater importance (Do et al., 2023; Chotisarn & Phuthong, 2025).

The Stimulus-Organism-Response (S-O-R) framework (Mehrabian & Russell, 1974) further explains customer behavior by linking external stimuli to internal psychological states and subsequent responses. In the CBEC context, post-purchase service elements act as stimuli, customer satisfaction represents the organism, and behavioral outcomes such as repurchase intention and eWOM serve as responses (Al-Adwan et al., 2022).

Additionally, Expectation-Confirmation Theory (ECT) (Oliver, 1980) explains how satisfaction is formed through the comparison of expectations and actual performance. In CBEC, consumers often adjust expectations due to perceived risks, making effective post-purchase services crucial for achieving positive confirmation and satisfaction.

Dimensions of Post-Purchase Service Quality in CBEC

Building on existing literature, PPSQ is conceptualized as a multidimensional construct consisting of several key service elements.

Order Tracking (OT) is a critical component that enhances transparency and reduces uncertainty during the delivery process. Accurate and real-time tracking information has been shown to improve trust and perceived security in online transactions (Cui et al., 2019). This is particularly important in emerging markets where logistics reliability may be inconsistent (Do et al., 2023).

Easy Exchange and Return (EER) policies play a significant role in reducing perceived risk. Although cross-border returns are complex and costly, their perceived ease strongly influences purchase decisions and satisfaction (Ho & Chuang, 2023; Zhang et al., 2024a). Clear and customer-friendly return policies serve as psychological reassurance for consumers.

Responsive Customer Support (RCS) is another crucial dimension, especially when issues arise post-purchase. Effective support characterized by accessibility, empathy, and prompt resolution significantly enhances customer satisfaction (Han et al., 2023b; Wang et al., 2022). In collectivist cultures, such as Pakistan, interpersonal communication and responsiveness are particularly valued.

Product Usage Instructions (PUI) contribute to customer experience by ensuring that consumers can effectively use purchased products. While important for complex goods, their impact may vary depending on product type and consumer familiarity. In some cases, external sources such as online tutorials reduce reliance on platform-provided instructions.

Loyalty and Reward Programs (LRP) aim to encourage repeat purchases by offering incentives such as points and discounts. While these programs can

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enhance repurchase intention (Mellatinova, 2021), their effectiveness in CBEC may be limited by factors such as purchase frequency and perceived value.

Customer Satisfaction and Behavioral Outcomes

Customer satisfaction in CBEC is a cumulative evaluation of the entire service experience, heavily influenced by post-purchase interactions (Oh et al., 2022). It represents the central mechanism through which service quality translates into behavioral outcomes.

One key outcome is **Repurchase Intention (RPI)**, which reflects customer loyalty and long-term business sustainability. Research consistently demonstrates a strong positive relationship between satisfaction and repurchase intention in both domestic and cross-border e-commerce contexts (Do et al., 2023; Liu et al., 2023). In emerging markets, this relationship may be even stronger due to higher perceived risks and switching costs (Chen et al., 2023).

Another important outcome is **Electronic Word-of-Mouth (eWOM)**, where customers share their experiences through digital platforms. Positive eWOM is particularly influential in CBEC due to the uncertainty associated with international purchases. Satisfied customers often act as brand advocates, influencing the decisions of other consumers (Akinci & Aksoy, 2019; Mellatinova, 2021). In collectivist societies, where social recommendations carry significant weight, the impact of eWOM is even more pronounced.

Overall, the literature establishes that post-purchase service quality plays a critical role in shaping customer satisfaction, which in turn drives loyalty and advocacy behaviors. However, there remains a need for context-specific research, particularly in emerging markets like Pakistan, to better understand how these relationships operate under different cultural and economic conditions .

Research Methodology

This study employs a quantitative, cross-sectional research design to examine the relationships between Post-Purchase Service Quality (PPSQ) dimensions, Customer Satisfaction, Repurchase Intention, and Electronic Word-of-Mouth in the Pakistani cross-border e-commerce context.

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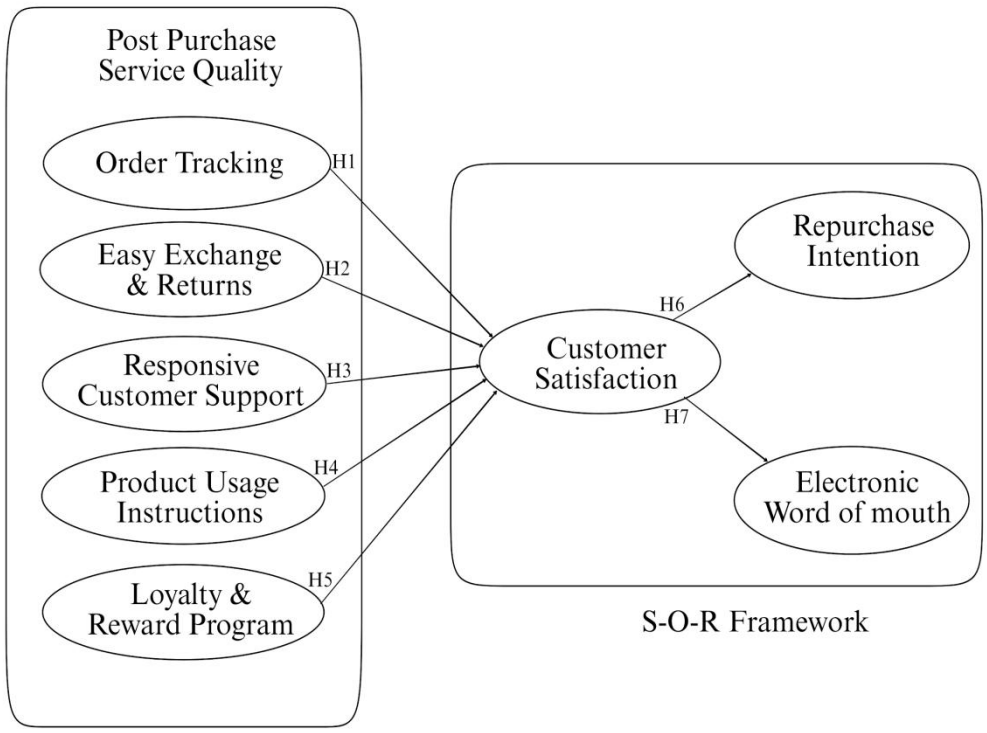

Fig 1. S-O-R Framework

Method and Procedure Used

A cross-sectional design involves collecting data from a sample of the population at a single point in time, which is appropriate for capturing perceptions and relationships as they exist at the time of the study (Hair et al., 2019). This method is widely used in e-commerce and consumer behavior research due to its efficiency in testing hypothesized relationships between multiple variables (Do et al., 2023; Chotisarn & Phuthong, 2025).

The research procedure followed a structured sequence:

1. Theoretical Framework Development: Based on the literature review (Chapter 2), a conceptual model was developed, positioning five PPSQ dimensions as independent variables influencing the mediating variable (Customer Satisfaction), which in turn influences two dependent variables (Repurchase Intention and eWOM).
2. Instrument Development: A structured questionnaire was designed, with measurement scales for all constructs adapted from established literature in e-commerce, service quality, and CBEC studies to ensure content validity.
3. Pilot Testing: The questionnaire was pilot-tested with a small sample (n=100) of Pakistani CBEC consumers to assess clarity, comprehensibility, and the preliminary reliability of the scales. Minor refinements were made based on feedback.

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4. Data Collection: The final survey was distributed online to a targeted sample of Pakistani consumers with CBEC experience.
5. Data Analysis: Collected data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS software. PLS-SEM is particularly suitable for this study because: (a) it is well-suited for predictive research models and theory development; (b) it can handle complex models with multiple independent and dependent variables; and (c) it makes fewer assumptions about data distribution, which is advantageous with Likert-scale data (Hair et al., 2019; Sarstedt et al., 2022).
6. Hypothesis Testing: The analysis involved a two-step process: (i) assessment of the measurement model (reliability and validity of constructs), and (ii) assessment of the structural model (testing the hypothesized paths).

Tools of Research or Sources of Data

The primary tool for this research was a self-administered online questionnaire. The questionnaire was divided into two main sections:

- Section A: Screening and Demographic Information. This section included two screening questions to ensure respondents had experience with CBEC platforms. It also collected demographic data (gender, age, education, etc.) and CBEC usage patterns (experience length, annual spending, product categories purchased). This data aids in describing the sample and can be used for post-hoc analyses.
- Section B: Measurement of Constructs. This was the core of the survey, measuring all latent variables in the model. All items were measured using a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). The constructs and their measurement sources are detailed in Table 1 below.

Techniques of Data Collection

Data were collected using non-probability purposive sampling, a technique appropriate when targeting a population with specific characteristics in this case, Pakistani consumers with verifiable CBEC experience (Etikan et al., 2016). This method is common in CBEC research where the population of interest is a subset of the general online shopping public (Valarezo et al., 2018; Chotisarn & Phuthong, 2025).

The data collection technique was an online survey distributed through digital channels. This method was chosen for its:

- Efficiency and Reach: Ability to access geographically dispersed CBEC consumers across Pakistan.
- Cost-Effectiveness: Lower administrative costs compared to face-to-face methods.
- Convenience for Respondents: Allowing participants to respond at their leisure, potentially increasing completion rates.

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- Automated Data Entry: Reducing manual errors.

The survey was disseminated via:

1. Social Media Platforms: Targeted posts on Facebook, Instagram, and LinkedIn in Pakistani e-commerce and shopping enthusiast groups.
2. University Networks: Circulated among students and alumni networks of major Pakistani universities, a demographic highly active in online shopping.
3. Professional Mailing Lists: Shared with members of digital business and marketing associations in Pakistan.

To ensure data quality, two screening questions were implemented at the start: (1) confirmation of informed consent, and (2) verification of having made at least one purchase from an international/CBEC website (e.g., Amazon US/UK, AliExpress, Shein). Only respondents passing both screens could proceed to the main survey.

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Table 1. Constructs, Definitions, and Measurement Sources

Construct	Acronym	Operational Definition	Questions	Key Source(s)
Order Tracking	OT	The degree to which the CBEC platform provides clear, accurate, accessible, and proactive information regarding the status and location of a shipped order after purchase.	OT1: This website provides clear and easy-to-understand tracking information. OT2: This website provides accurate, real-time updates on my order's journey. OT3: This website makes it easy to find and access tracking information. OT4: This website proactively sends timely notifications about delivery status.	Cui et al. (2019); Do et al. (2023)
Easy Exchange & Return	EER	The perceived simplicity, clarity, and efficiency of the platform's process for returning or exchanging products, including policy understanding and logistical convenience.	EER1: This website provides a clear and easy-to-understand return/exchange policy. EER2: This website efficiently processes exchanges and sends the new item in a timely manner. EER3: This website efficiently processes product exchanges and sends the new item to me on time	Ho & Chuang (2023); Zhang et al. (2024)
Responsive Customer Support	RCS	The perceived effectiveness, accessibility, and communicative adequacy of the platform's customer service in resolving post-purchase inquiries and issues.	RCS1: This website provides a quick response to my post-purchase inquiries/issues. RCS2: The customer support team is easy to reach through various channels. RCS3: This website provides helpful and effective solutions to my problems timely. RCS4: The support team keeps me informed about the progress of my issue.	Han et al. (2023b); Wang et al. (2022)
Product Usage Instructions	PUI	The perceived clarity, completeness, accessibility, and linguistic appropriateness of the guidance provided for using or assembling the purchased product.	PUI1: This website ensures products come with clear and understandable usage instructions. PUI2: The provided instructions are complete with all necessary information. PUI3: This website provides easy access to usage instructions (in package/online). PUI4: The usage instructions are available in a language I can easily understand.	(Parasuraman et al., 1988).
Loyalty & Reward Programs	LRP	The perceived existence, value, usability, and influence of structured programs designed to incentivize repeat purchases through points, rewards, or exclusive benefits.	LRP1: This website provides a loyalty or rewards program. LRP2: The rewards offered are valuable and appealing. LRP3: It is simple and convenient to earn and redeem loyalty points/rewards. LRP4: This loyalty program encourages me to choose them for future purchases.	Mellatinova (2021)
Customer Satisfaction	CS	The consumer's overall affective evaluation and contentment with the post-purchase service experience provided by the CBEC platform.	CS1: Your experience with this website met or exceeded your expectations. CS2: You are very pleased with your decision to use this website. CS3: You would strongly recommend this website to others. CS4: Using this website for international purchases was the right choice.	Oh et al. (2022); Do et al. (2023)
Repurchase Intention	RPI	The consumer's stated likelihood or plan to engage in future transactions with the same CBEC platform.	RPI1: You intend to make another purchase from this website in the future. RPI2: You will choose this website as your primary option for future orders. RPI3: You are likely to continue using this website's service.	Liu et al. (2023); Do et al. (2023)
Electronic Word-of-Mouth	EWOM	The consumer's intention to digitally share positive evaluations, recommendations, or experiences about the CBEC platform with others.	EWOM1: You would write a positive review about this website on a public site. EWOM2: You would recommend this website to others on social media/forums. EWOM3: You would share your positive experience with friends and family. EWOM4: You will recommend this website to anyone seeking advice.	Al-Adwan et al. (2022); Mellatinova (2021)

Description of Technique Used: Partial Least Squares Structural Equation Modeling (PLS-SEM)

The primary data analysis technique was Partial Least Squares Structural Equation Modeling (PLS-SEM), performed using SmartPLS 4 software. PLS-SEM is a variance-based structural equation modeling technique that is increasingly preferred in marketing, logistics, and e-commerce research (Hair et al., 2019; Sarstedt et al., 2022).

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Rationale for Choosing PLS-SEM:

1. Predictive Orientation: The study's objective is to predict key dependent variables (RPI, eWOM) and identify the strength of influencing factors, which aligns with PLS-SEM's primary goal (Hair et al., 2019).
2. Complex Model Structure: The model includes multiple independent constructs (5 PPSQ dimensions) leading to a mediator (CS) and then to two final dependent variables. PLS-SEM handles such complex path models effectively.
3. Non-Normal Data: Data from Likert scales often violate the strict normality assumptions required by covariance-based SEM (CB-SEM). PLS-SEM is more robust with non-normal data (Hair et al., 2019).
4. Small to Moderate Sample Sizes: While our sample met recommended thresholds, PLS-SEM generally provides more reliable results with smaller samples compared to CB-SEM (Hair et al., 2019).

Two-Stage Analytical Procedure:

Stage 1: Assessment of the Measurement (Outer) Model.

This stage evaluates the reliability and validity of the constructs (latent variables) as measured by their indicators (questionnaire items).

- Internal Consistency Reliability: Assessed using Composite Reliability (CR) and Cronbach's Alpha (α). Values above 0.70 are considered acceptable, indicating the items consistently measure the same construct (Hair et al., 2019).
- Convergent Validity: Evaluated using Indicator Loadings and Average Variance Extracted (AVE). Loadings should ideally be >0.708, and AVE for each construct should be >0.50, indicating the construct explains more than half of the variance of its indicators (Hair et al., 2021).
- Discriminant Validity: Ensures each construct is distinct from others. This was assessed using the Heterotrait-Monotrait (HTMT) ratio of correlations. An HTMT value below 0.90 (or a more conservative 0.85) indicates sufficient discriminant validity (Henseler et al., 2015).

Stage 2: Assessment of the Structural (Inner) Model.

This stage tests the hypothesized relationships between constructs.

- Collinearity Assessment: Variance Inflation Factor (VIF) values for predictor constructs were checked to ensure they were below 5 (preferably below 3), indicating no harmful multicollinearity (Hair et al., 2019).
- Path Coefficients (β): The standardized coefficients for each hypothesized path were examined. Their sign, magnitude, and statistical significance (using bootstrapping with 5000 subsamples to generate t-statistics and p-values) indicate the strength and direction of the relationships.
- Coefficient of Determination (R^2): The R^2 value for endogenous constructs (CS, RPI, eWOM) was evaluated. It represents the proportion of variance

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explained by its predictors. Values of 0.75, 0.50, and 0.25 are considered substantial, moderate, and weak, respectively (Henseler et al., 2009).

- Effect Size (f^2): Calculated to assess the substantive impact of an exogenous construct on an endogenous construct. Values of 0.02, 0.15, and 0.35 indicate small, medium, and large effects, respectively (Cohen, 1988).
- Predictive Relevance (Q^2): Assessed using the Stone-Geisser Q^2 test via the blindfolding procedure. A Q^2 value > 0 for an endogenous construct suggests the model has predictive relevance for that construct (Hair et al., 2019).

Sample Size Justification:

Following the widely cited "10-times rule" for PLS-SEM (Hair et al., 2019), which suggests a minimum sample size of 10 times the largest number of structural paths directed at a particular construct in the model, the required minimum was determined. In our model, Customer Satisfaction (CS) is predicted by five constructs, requiring a minimum of 50 respondents. To ensure robustness, statistical power, and the ability to perform subgroup analyses, we targeted and collected a substantially larger sample.

Data Analysis

We analyze data collected to investigate the impact of post-purchase service quality on customer behavior in the context of cross-border e-commerce (CBEC) in Pakistan. The analysis follows a two-stage approach for Partial Least Squares Structural Equation Modeling (PLS-SEM): (1) assessment of the measurement model to evaluate the reliability and validity of the constructs, and (2) assessment of the structural model to test the hypothesized relationships. Data analysis was conducted using SmartPLS software.

Table 2: ***Summary Of Sample Characteristics***

Demographic characteristics	**Samples (n)**	**Percentage (%)**
1. Gender		
Male	61	62%
Female	37	38%
2.Age		
18 - 22 years	12	12%
23 - 29 years	68	69%
30 - 39 years	14	14%
40 years and above	4	4%
3. Highest education level		
Below Bachelor's degree	14	14%
Bachelor's degree	40	41%

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above Bachelor's degree.	44	45%
4. Experience in using cross-Border e-commerce Platforms		
less than 1 year	58	59%
1-3 years	25	26%
3-5 years	6	6%
More than 5 years.	9	9%

4.1 Measurement Model Assessment

The measurement model was assessed for reliability, convergent validity, and discriminant validity to ensure the constructs were measured accurately and distinctly.

4.1.1 Reliability and Convergent Validity

Reliability and convergent validity were assessed using factor loadings, Cronbach's alpha, composite reliability (rho_c), and average variance extracted (AVE). The results, presented in Table 3 and Table 4, confirm the robustness of the measurement scales.

Table 3: ***Construct reliability and validity***

	Cronbach's alpha	**Composite reliability (rho_a)**	**Composite reliability (rho_c)**	**Average variance extracted (AVE)**
CS	0.815	0.829	0.877	0.641
EER	0.718	0.717	0.842	0.639
EWOM	0.857	0.869	0.903	0.701
LRP	0.869	0.878	0.91	0.717
OT	0.779	0.781	0.858	0.602
RPI	0.837	0.839	0.902	0.755
PUI	0.837	0.838	0.891	0.672
RCS	0.826	0.836	0.885	0.658

All constructs demonstrate good to excellent internal consistency, as evidenced by Cronbach's alpha and composite reliability values exceeding the recommended threshold of 0.70 (Hair et al., 2019). Convergent validity is established, as the Average Variance Extracted (AVE) for each construct is above 0.50 (Fornell & Larcker, 1981), indicating that the items explain more variance in their respective construct than error variance.

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Table 4: ***Outer loadings***

	CS	EER	EWOM	LRP	OT	RPI	PUI	RSC
CS1	0.768							
CS2	0.764							
CS3	0.833							
CS4	0.835							
EER1		0.781						
EER2		0.820						
EER3		0.797						
EWOM1			0.749					
EWOM2			0.884					
EWOM3			0.890					
EWOM4			0.818					
LRP1				0.818				
LRP2				0.880				
LRP3				0.850				
LRP4				0.836				
OT1					0.761			
OT2					0.810			
OT3					0.810			
OT4					0.720			
RPI1						0.835		
RPI2						0.879		
RPI3						0.892		
PUI1							0.813	
PUI2							0.844	
PUI3							0.821	
PUI4							0.800	
RCS1								0.730
RCS2								0.807
RCS3								0.851
RCS4								0.851

All indicator loadings are above the acceptable threshold of 0.708 (Hair et al., 2021), with the lowest being 0.720 (OT4). This confirms that each item is a

reliable measure of its assigned latent construct, thereby establishing strong indicator reliability. The bootstrapping analysis (see Table in Appendix) further confirms the loadings which are statistically significant ($p < 0.001$).

Table 5: ***Discriminant Validity (Heterotrait-Monotrait Ratio - HTMT)***

	CS	EER	EWOM	LRP	OT	RPI	PUI	RCS
CS								
EER	0.849							
EOWM	0.853	0.796						
LRP	0.548	0.62	0.55					
OT	0.849	0.818	0.717	0.581				
RPI	0.796	0.662	0.779	0.484	0.565			
PUI	0.632	0.75	0.581	0.437	0.717	0.531		
RCS	0.832	0.773	0.738	0.555	0.854	0.574	0.643	

Discriminant validity is established as all HTMT values are below the conservative threshold of 0.85 (Kline, 2011) and the liberal threshold of 0.90 (Gold et al., 2001).The highest correlation lies between OT and RCS (0.854) and similarly between EWOM and CS (0.853) which reflect that these service facets are closely related in the customer's mind. Table 5 conclusively demonstrates that the measurement model possesses excellent discriminant validity. All constructs are sufficiently distinct from one another to proceed with confidence in interpreting the structural model's results. The acceptable correlations between key drivers (OT, EER, RCS) and customer satisfaction (CS) aptly reflect the integrated nature of a positive post-purchase service experience.

Table 6: ***R-square Overview***

	R-square	R-square Adjusted
CS	0.654	0.635
EWOM	0.54	0.535
RPI	0.441	0.435

1. Customer Satisfaction ($R^2 = 0.654$):

- The five post-purchase service quality (PPSQ) dimensions (OT, EER, RCS, PUI, LRP) collectively explain 65.4% of the variance in Customer Satisfaction.
- This represents a substantial level of explanatory power according to common benchmarks in behavioral research (e.g., Cohen, 1988, where $R^2 > 0.26$ is considered substantial). This strong result confirms that the selected PPSQ factors are highly relevant and critical drivers of how

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satisfied Pakistani CBEC consumers feel after a purchase. The adjusted R^2 (0.635) remains very high, indicating the model is robust and not overfitted.

2. Electronic Word-of-Mouth (R^2 = 0.540):

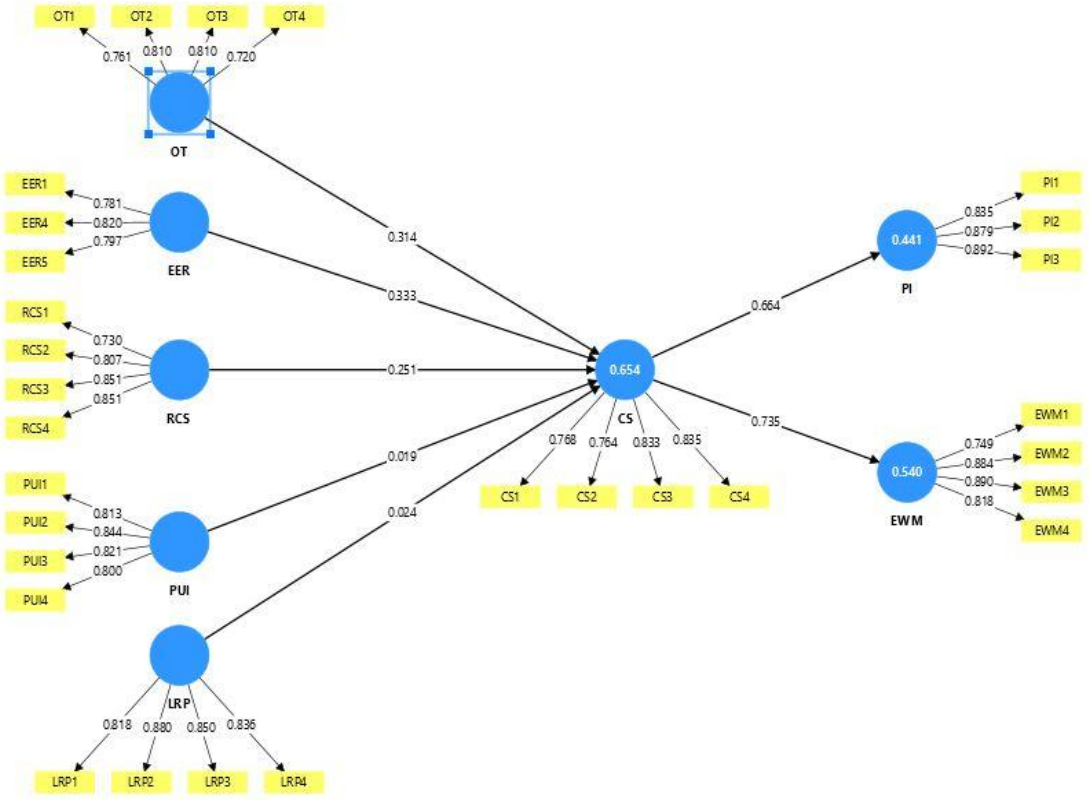
○ Customer Satisfaction alone explains 54.0% of the variance in consumers' intention to spread positive Electronic Word-of-Mouth.

○ This indicates a moderate to substantial explanatory power. It underscores that a customer's satisfaction level is a dominant and powerful predictor of their willingness to recommend the platform or share positive experiences online, which is crucial for organic growth and trust-building in digital markets.

3. Repurchase Intention (R^2 = 0.441):

○ Customer Satisfaction explains 44.1% of the variance in Repurchase Intention.

○ This represents a moderate level of explanation. It confirms the fundamental and strong relationship between satisfaction and loyalty, while also suggesting that other factors not included in this model (e.g., perceived value, alternative attractiveness, or brand trust) may also play a significant role in a customer's final decision to buy again.



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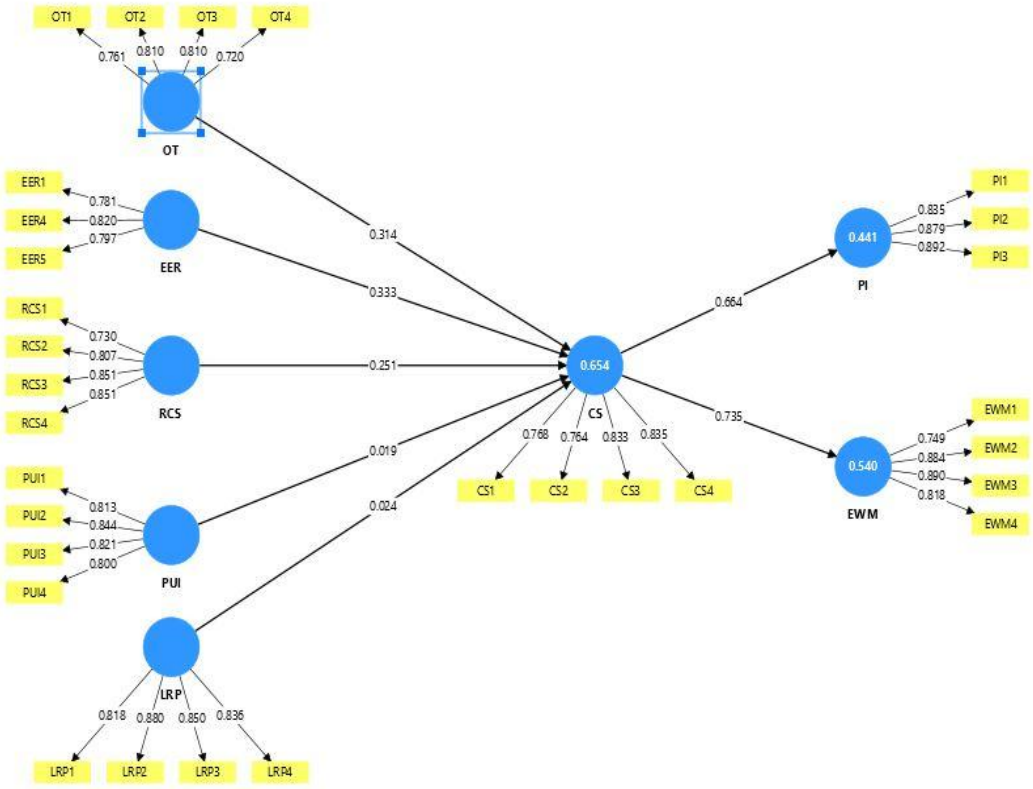

Fig 2. PLS-SEM Algorithm Results (Path Coefficients and R^2 Values)

(A visual representation of the structural model with path coefficients for significant paths and R^2 values for endogenous constructs. The image would show OT, EER, RCS, PUI, and LRP pointing to CS, and CS pointing to PI and EWM. The non-significant paths (PUI->CS and LRP->CS) would typically be shown with dashed lines.)

4.2 Structural Model Assessment and Hypothesis Testing

After confirming the validity and reliability of the measurement model, the structural model was evaluated to test the research hypotheses. The model's explanatory power, path coefficients, and their significance were examined through a bootstrapping procedure with 5,000 subsamples.

4.2.1 Structural Model Path Coefficients and Hypothesis Testing

The results of the hypothesis testing are summarized in Table 7 and visualized in Figure 2, which presents the PLS-SEM algorithm results with path coefficients.

Table 7: ***Path coefficients - Mean, STDEV, T values, p values***

Hypothesis	Path	β Coefficient	t-statistic	p-value	Result
H1	OT -> CS	0.314	2.887	0.004	Supported
H2	EER -> CS	0.333	2.331	0.020	Supported

H3	RCS -> CS	0.251	2.347	0.019	Supported
H4	PUI -> CS	0.019	0.226	0.821	Not Supported
H5	LRP -> CS	0.024	0.353	0.724	Not Supported
H6	CS -> RPI	0.664	11.317	0	Supported
H7	CS -> EWOM	0.735	14.263	0	Supported

- H1, H2, H3 (Supported): The analysis reveals that three dimensions of Post-Purchase Service Quality have a significant positive impact on Customer Satisfaction. Easy Exchange & Return (EER) has the strongest effect ($\beta=0.333$, $p<0.05$), followed closely by Order Tracking (OT) ($\beta=0.314$, $p<0.01$) and Responsive Customer Support (RCS) ($\beta=0.251$, $p<0.05$). This indicates that for Pakistani CBEC consumers, transparent and efficient return policies, reliable order tracking, and accessible, helpful customer support are critical drivers of satisfaction after a purchase is made.
- H4, H5 (Not Supported): Contrary to expectations, Product Usage Instructions (PUI) ($\beta=0.019$, $p>0.10$) and Loyalty & Reward Programs (LRP) ($\beta=0.024$, $p>0.10$) did not significantly influence Customer Satisfaction. This suggests that, in the CBEC context for this sample, providing detailed product manuals or offering points-based reward systems are not primary factors in shaping post-purchase contentment.
- H6, H7 (Supported): The results strongly confirm the central role of Customer Satisfaction in driving positive behavioral outcomes. Satisfaction has a substantial and highly significant positive effect on both Repurchase Intention (RPI) ($\beta=0.664$, $p<0.001$) and Electronic Word-of-Mouth (EWOM) ($\beta=0.735$, $p<0.001$). Satisfied customers are not only likely to buy from the same platform again but are also highly inclined to recommend it to others online.

4.2.2 Coefficient of Determination (R^2) and Predictive Relevance

The model's explanatory power was evaluated using the coefficient of determination (R^2). The blindfolding procedure was used to assess the model's predictive relevance (Q^2).

- Explanatory Power (R^2): The model explains 53.9% of the variance in Customer Satisfaction ($R^2 = 0.539$), indicating a moderate to substantial explanatory power. Furthermore, it explains 44.1% of the variance in Repurchase Intention ($R^2 = 0.441$) and 54.0% of the variance in Electronic Word-of-Mouth ($R^2 = 0.540$), which are considered moderate levels of explanation in behavioral research.
- Predictive Relevance (Q^2): The Stone-Geisser Q^2 values, obtained through the blindfolding procedure, were greater than zero for all endogenous

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constructs (CS: $Q^2 = 0.349$; PI: $Q^2 = 0.319$; EWM: $Q^2 = 0.412$). This confirms that the model has predictive relevance for the dependent constructs (Henseler et al., 2009).

4.2.3 Effect Sizes (f^2)

The effect size (f^2) was calculated to understand the impact of omitting an exogenous construct on the R^2 value of an endogenous construct. The findings show:

- Customer Satisfaction (CS) has a large effect on both EWOM ($f^2 = 1.17$) and RPI ($f^2 = 0.79$).
- Among the PPSQ dimensions, EER ($f^2 = 0.078$) and OT ($f^2 = 0.069$) have notable effects on CS, while RCS ($f^2 = 0.041$) has a small but notable effect. PUI and LRP have negligible effects ($f^2 < 0.02$) on CS, reinforcing their non-significance.

The data analysis provides strong support for the core of the proposed model. The measurement model is valid and reliable. Structurally, the findings highlight that operational post-purchase services managing returns, providing tracking, and offering support are key to satisfying Pakistani CBEC customers. This satisfaction in turn is a powerful driver of customer loyalty (repurchase) and advocacy (positive word-of-mouth). The non-significant role of instructional support and loyalty programs offers a crucial strategic insight for platform managers.

Discussion

The findings of this study provide important insights into how post-purchase service quality (PPSQ) influences customer behavior in the context of cross-border e-commerce (CBEC) in Pakistan. The results indicate that three key dimensions—Responsive Customer Support (RCS), Easy Exchange and Return (EER), and Order Tracking (OT)—have a significant positive impact on customer satisfaction. These dimensions directly address the uncertainty and perceived risk associated with international online shopping, which is particularly relevant in emerging markets. For instance, EER serves as a strong risk-reduction mechanism by offering customers reassurance that issues can be resolved efficiently, while OT enhances transparency and reduces anxiety during delivery. Similarly, RCS reflects the importance of timely, effective, and empathetic communication in resolving post-purchase concerns, which is highly valued in collectivist cultures (Han et al., 2023b; Wang et al., 2022).

On the other hand, Product Usage Instructions (PUI) and Loyalty and Reward Programs (LRP) were found to have no significant impact on customer satisfaction. This suggests that these elements may be perceived as basic or secondary features rather than key drivers of satisfaction. Consumers may rely on external sources such as online tutorials for product usage, while

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loyalty programs may not provide immediate or tangible value in a price-sensitive market like Pakistan (Mellatinova, 2021).

The study also confirms the central role of customer satisfaction in shaping behavioral outcomes. A strong positive relationship was observed between satisfaction and both repurchase intention and electronic word-of-mouth (eWOM). This indicates that satisfied customers are more likely to engage in repeat purchases and share positive experiences online, contributing to both customer retention and new customer acquisition (Do et al., 2023; Liu et al., 2023).

Overall, the findings highlight that operational reliability and effective post-purchase support are the primary drivers of satisfaction in CBEC, emphasizing the need for businesses to prioritize these aspects to build trust and long-term customer relationships in emerging markets

Implications

The findings of this study offer both theoretical and practical implications for cross-border e-commerce (CBEC). From a theoretical perspective, the research extends service quality literature by emphasizing the importance of post-purchase service quality (PPSQ) as a distinct and critical phase in the customer journey. It highlights that not all service dimensions contribute equally to customer satisfaction, thereby challenging the assumption that all value-added services enhance consumer experience. The study also reinforces the applicability of frameworks such as the Stimulus-Organism-Response (S-O-R) model and Expectation-Confirmation Theory (ECT) in explaining customer behavior in digital and cross-border contexts.

From a practical standpoint, the results provide clear guidance for CBEC platforms targeting emerging markets like Pakistan. Businesses should prioritize operationally critical services such as efficient return policies, transparent order tracking systems, and responsive customer support. These elements directly reduce perceived risk and build trust, which are essential for customer satisfaction and retention. In contrast, resources allocated to loyalty programs and product instructions may yield limited returns unless they provide immediate and tangible value. Overall, firms can use these insights to optimize resource allocation, enhance customer experience, and strengthen competitive positioning in the global e-commerce landscape .

Conclusion

This study set out to examine the impact of post-purchase service quality (PPSQ) on customer behavior in the context of cross-border e-commerce (CBEC) from a Pakistani consumer perspective. In doing so, it addressed a significant gap in existing literature, which has traditionally focused more on pre-purchase and logistical aspects while overlooking the critical post-purchase phase. The findings clearly demonstrate that post-purchase

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experiences play a decisive role in shaping customer satisfaction, loyalty, and advocacy in international online shopping environments.

The study identifies three key dimensions—Responsive Customer Support (RCS), Easy Exchange and Return (EER), and Order Tracking (OT)—as the primary drivers of customer satisfaction. These elements directly address the uncertainties and risks associated with cross-border transactions, particularly in emerging markets where logistical and institutional challenges are more pronounced. By ensuring transparency, reliability, and effective problem resolution, these services help build trust and reduce customer anxiety, ultimately leading to higher satisfaction levels.

In contrast, Product Usage Instructions (PUI) and Loyalty and Reward Programs (LRP) were found to have no significant impact on satisfaction. This suggests that consumers in the Pakistani CBEC context prioritize core functional and risk-mitigating services over supplementary or long-term benefits. Such findings provide a clearer hierarchy of service priorities, enabling businesses to focus on what truly matters to customers.

Furthermore, the study confirms that customer satisfaction is a strong predictor of both repurchase intention and electronic word-of-mouth (eWOM). Satisfied customers are more likely to return to the same platform and recommend it to others, highlighting the dual role of satisfaction in driving both retention and acquisition.

In conclusion, this research underscores that success in cross-border e-commerce is not solely determined by competitive pricing or efficient delivery but by the quality of the post-purchase experience. For platforms operating in emerging markets like Pakistan, investing in reliable support systems, seamless return processes, and transparent tracking mechanisms is essential for building long-term customer relationships and achieving sustainable growth in an increasingly competitive digital marketplace .

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