

Exploring Regional Consumer Cross-Border E-Commerce Behavior in the Digital Economy: A Study of the Greater Bay Area in China

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Abstract: In the context of the digital economy, cross-border e-commerce has become a crucial engine driving China's trade growth. This study explores the behavioral mechanisms of consumers in the Guangdong-Hong Kong-Macao Greater Bay Area (GBA) through the lens of the Information Technology Ecosystem (ITE). By integrating technological, organizational, social, and institutional dimensions, the research constructs an analytical framework to examine how digital infrastructure, platform collaboration, social interaction, and policy regulation collectively shape consumer trust, satisfaction, and loyalty. The study enriches the theoretical application of the ITE perspective in digital commerce and provides practical implications for promoting coordinated development, regulatory optimization, and innovation-driven growth within China's cross-border e-commerce ecosystem.

Keywords: Cross-border E-commerce; Consumer Behavior; Digital Economy; Information Technology Ecosystem.

1. Introduction

The digital economy, driven by technologies such as the Internet, big data, and artificial intelligence, has brought new business models and consumption patterns. As an essential component of the digital economy, cross-border e-commerce has become a major growth driver in China's trade. Leveraging its advanced technological foundation, developed manufacturing industry, and efficient logistics system, the Guangdong-Hong Kong-Macao Greater Bay Area (GBA) has become a leading region in China's cross-border e-commerce development, providing consumers with a high-quality and convenient shopping experience. However, technological progress, market fluctuations, business strategies, and policy adjustments continuously reshape consumer shopping behaviors (Shankar and Kalyanam et al., 2021). These changes present new challenges for cross-border e-commerce enterprises' operations within the GBA and raise important policy issues for government management and regulation. In the context of the deepening digital economy, an in-depth analysis of the formation and management strategies of GBA consumers' cross-border e-commerce behaviors can offer valuable insights for other regions in China.

2. Literature Review

2.1. Studies on Cross-Border E-Commerce Consumer Behavior

With the advancement of information technology, more consumers are engaging in cross-border e-commerce transactions. Understanding the factors influencing consumer motivations in this domain is crucial. Existing studies mainly focus on individual consumer factors and external environmental factors (Zhu and Mou et al., 2019). On the individual level, trust and perceived risk have been found to significantly affect cross-border shopping behavior (Wang and Liu et al., 2023). Moreover, demographic and

psychosocial factors have proven effective in explaining behavioral variations (Dmitrovic and Vida, 2007). On the external level, contextual cues such as online promotions, personalized recommendations, and social reviews significantly influence consumers' purchase intentions in cross-border contexts (Xiao et al. 2019). The COVID-19 pandemic further accelerated the shift toward online shopping, reshaping retail patterns (Tömöri and Staniscia, 2023).

2.2. Interaction Between the Digital Economy and Consumer Behavior

The digital economy, characterized by the integration of digital technologies into economic activities, has redefined how consumers interact with products and services. Digitalization has transformed consumer-business interactions and decision-making processes. Many studies have explored how digitalization influences consumer decisions by providing abundant online information that shapes perceptions and behaviors. Goldfarb and Tucker (2019) demonstrate how digital technologies reduce transaction costs and alter shopping patterns. Digital economy modifies consumer choices through multiple mechanisms. Recent research also connects this relationship with marketing strategies and corporate innovation. (Chandra and Verma et al., 2022) underscore the impact of personalized marketing on consumer decisions, while Hu and Meng (2023) investigate the relationship between digital literacy and green consumption. Li et al., (2023) further points out the mutual dependence between enterprises and consumers in the digital economy.

2.3. Cross-Border E-Commerce Management Strategies

Government policies and corporate management strategies play a critical role in shaping cross-border e-commerce ecosystems. Choi et al., 2019) emphasize the importance of improving regulatory systems and enhancing port cooperation. Elia et al., 2021) stress the necessity of

strengthening digital infrastructure to support sustainable e-commerce growth, while Qiu et al., 2022) advocate for policy mechanisms that ensure the long-term development of cross-border logistics and trade. Wen et al. (2021) explore the significance of e-commerce development for export performance and regional economic growth. On the corporate side, logistics management remains a key concern due to cost and complexity challenges. Companies enhance efficiency by optimizing logistics networks and partnering with service providers. Payment risk management is also crucial, as regional differences in payment systems introduce financial uncertainty (Giuffrida and Jiang et al., 2021).

2.4. Research Gaps

(1) The relationship between digital technology and consumer cross-border e-commerce behavior remains underexplored. The digital economy directly influences consumers' online shopping habits through technological enablers such as internet penetration and digital payment, yet existing research lacks an integrated framework to explain this interaction.

(2) Theoretical models for managing cross-border e-commerce behavior remain fragmented. Current studies focus on isolated aspects—consumer psychology, market strategy, or policy effects—without integrating them into a unified ecosystemic framework. Hence, applying the Information Technology Ecosystem (ITE) perspective provides a holistic approach to understanding and managing these complex interactions.

3. The Information Technology Ecosystem Perspective

The **Information Technology Ecosystem (ITE)** refers to a dynamic, co-evolving system centered on information technology and composed of diverse entities including technology platforms, business organizations, policy environments, and socio-cultural contexts and users. Unlike traditional perspectives that treat IT as a static organizational resource, the ecosystem approach emphasizes the interdependence among technology, organizations, and environments. Within such ecosystems, IT is embedded within a continuously evolving structure in which interactions and degrees of coupling among actors determine innovation and behavioral patterns in digital contexts.

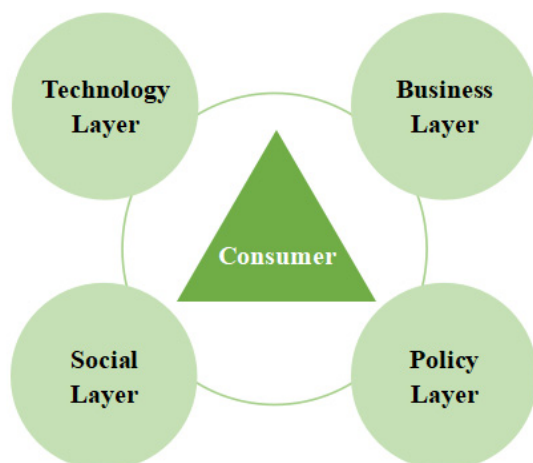


Figure 1. Consumer Behavior Analyzing Framework Using ITE

In the digital economy era, cross-border e-commerce

activities in the GBA operate within a complex digital ecosystem comprising platforms, payment systems, logistics networks, institutional frameworks, and consumer communities. Consumer behavior is shaped not only by technical features such as platform usability and transaction security but also by organizational collaboration, social media influence, and policy coordination. Thus, the ITE perspective provides a comprehensive lens to reveal the multi-level interactions among these elements and explain how technological connectivity and value co-creation influence consumers' perceptions and decisions.

4. Analysis of Factors Influencing Cross-Border E-Commerce Behavior of Consumers in the Greater Bay Area

4.1. Technological Layer: Digital Infrastructure and the Shaping of the Shopping Experience

In the cross-border e-commerce ecosystem of the Guangdong–Hong Kong–Macao Greater Bay Area (GBA), the technological layer serves as the foundational element influencing consumer shopping behavior. Platform technology capabilities, payment systems, algorithmic recommendation engines, and cross-border logistics infrastructure together form the technical framework that supports consumers' overall experience.

First, the design of e-commerce platforms, user interface quality, and system stability directly affect consumers' perceptions of usability and satisfaction. For instance, personalized recommendation algorithms and intelligent search functions enable platforms to quickly match individual preferences, reducing information search costs and enhancing purchase conversion rates. Second, the security and diversity of cross-border payment systems—such as Alipay, WeChat Pay, PayMe, and international credit cards—significantly affect consumers' transaction trust. A seamless and secure payment process not only lowers the perceived complexity of cross-border transactions but also increases consumers' sense of control and safety. In addition, advancements in logistics technology, including intelligent warehousing, automated sorting, and real-time tracking systems, have greatly improved delivery speed and transparency. Consumers who can monitor order progress in real time tend to exhibit higher confidence in online purchases. For a highly digitized region like the GBA, technological improvement means lower transaction risks, greater efficiency, and better shopping experiences. Therefore, the technological layer does more than enhance convenience—it shapes user trust and perceived value, indirectly influencing satisfaction and loyalty (Daud and Farida et al., 2018). It thus serves as a critical pillar driving consumers' willingness to participate in and sustain cross-border e-commerce engagement.

4.2. Business Layer: Platform Collaboration and Service Quality as Determinants of Trust and Loyalty

The organizational layer forms the operational core that connects platforms, merchants, logistics enterprises, and supply chain partners within the IT ecosystem. It directly influences consumer trust and loyalty through governance mechanisms, coordination efficiency, and service quality.

Within the GBA's cross-border e-commerce environment, platforms act as both regulators and intermediaries of trust.

E-commerce platforms, as the core organizations of the ecosystem, play a dual role in setting rules and acting as trust intermediaries. They define market rules, implement quality control, and maintain transaction transparency. For instance, leading platforms such as Tmall Global and JD Worldwide have established comprehensive authentication and return policies to ensure product legitimacy and reduce perceived risk. Additionally, collaboration across supply chain actors plays a decisive role in consumers' shopping experience. Efficient coordination among overseas warehouses, customs authorities, and domestic logistics providers reduces delivery delays and service inconsistencies, enhancing overall satisfaction. Platforms and merchants also leverage big data analytics for precise marketing and customer relationship management, using personalized recommendations and membership systems to strengthen user engagement. As consumers receive timely responses and reliable service, they develop trust-based relationships with specific brands or platforms, which gradually evolve into loyalty. In essence, the organizational layer's collaborative efficiency improves not only service quality but also long-term consumer-firm relationships. It reduces transactional uncertainty and fosters a sense of security and belonging, thereby stabilizing and expanding consumer participation in cross-border e-commerce markets.

4.3. Social Layer: Social Interaction and Cultural Identity in Shaping Consumer Attitudes

The social layer captures the social interaction and cultural identity dimensions of consumer behavior within the cross-border e-commerce ecosystem, exerting a significant influence on emotional and attitudinal outcomes. The GBA's social environment is characterized by internationalization and cultural diversity, where consumers' shopping decisions are heavily shaped by social media engagement and cross-cultural influences.

Social media platforms such as Xiaohongshu, Douyin (TikTok), and Instagram serve as major channels for product information and word-of-mouth communication. Through influencer recommendations, user-generated content, and short video reviews, consumers form "social capital of trust," which often proves more persuasive than traditional advertising (Ahern and Hendryx, 2003). This interactive trust network enhances consumers' perceived credibility of product information and increases their purchase intentions. Moreover, cultural identification plays a vital psychological role in shaping consumer motivation. For instance, Hong Kong and Macao consumers often show stronger affinity toward European and American brands, while mainland consumers tend to prefer Japanese and Korean products due to fashion and aesthetic proximity. Such cultural alignment strengthens emotional attachment and allows consumers to express identity and lifestyle choices through cross-border purchases. Additionally, consumer communities and social networks reinforce conformity and symbolic consumption behaviors, transforming cross-border shopping into a form of social participation and cultural exchange. Overall, the social layer functions through mechanisms of social influence, cultural resonance, and communal interaction, deepening consumers' emotional engagement and integrating cross-border shopping into broader social and cultural contexts.

4.4. Policy Layer: Policy and Regulatory Frameworks as Foundations of Consumer Trust

The institutional layer provides the external foundation ensuring the healthy operation of the cross-border e-commerce ecosystem. Its central function lies in establishing stability and trust boundaries through effective policy design and regulatory mechanisms. Within the GBA's "one country, two systems" framework, regulatory diversity exists among China's mainland, Hong Kong, and Macao in areas such as customs duties, payment oversight, data privacy, and consumer protection. This diversity presents both challenges and opportunities for institutional innovation.

On the policy side, national initiatives such as cross-border e-commerce pilot zones, customs facilitation, and import tax reductions have lowered entry barriers and costs for consumers, thereby stimulating purchasing activity. Meanwhile, regulatory transparency and enforcement strength directly affect perceived consumer trust. Comprehensive systems for product traceability, data security, and dispute resolution can effectively reduce transaction risk and improve platform credibility. Furthermore, innovations in cross-border financial supervision—such as digital yuan settlement and the interconnection of electronic wallets—enhance payment convenience and safety. For consumers, sound institutional frameworks function not only as legal guarantees but also as psychological assurances, fostering confidence in the integrity of digital transactions. In sum, the institutional layer builds a stable, transparent, and equitable market environment that underpins the sustainability of the entire cross-border e-commerce ecosystem, while providing consumers with the regulatory trust necessary to engage confidently in cross-border online shopping.

5. Conclusion

From the perspective of the information technology ecosystem, GBA consumers' cross-border e-commerce behaviors are shaped by the dynamic interaction of technological, organizational, social, and institutional factors. To promote high-quality industry development, management should be optimized across these dimensions: technological, by strengthening digital infrastructure and applying AI, blockchain, and big data for intelligent recommendations and traceability; organizational, by enhancing supply chain collaboration and credit systems; social, by guiding social media and consumer communities toward positive engagement; and institutional, by coordinating regional policies and improving data security and consumer protection. Together, these efforts will foster a co-creative, trustworthy, and innovation-driven cross-border e-commerce ecosystem in the Greater Bay Area.

6. Contribution

This study adopts the Information Technology Ecosystem perspective to examine factors influencing consumer cross-border purchasing behavior in the digital economy, enriching theoretical applications of IT ecosystem theory in e-commerce research. It further integrates technological, organizational, and policy dimensions to provide a comprehensive theoretical foundation for understanding and guiding cross-border e-commerce management. Practically, the findings offer insights for government and industry

stakeholders:(1) Policy Optimization – Supporting regional authorities in designing adaptive cross-border e-commerce regulations; (2) Technological Innovation – Encouraging enterprises to integrate digital technologies and enhance competitiveness; (3) Ecosystem Coordination – Promoting cooperation among platforms, logistics providers, and regulators to foster a sustainable digital trade environment.

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