

Cross-Border E-Commerce and International Trade Integration: Trends, Challenges, And Strategic Pathways

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Abstract. The accelerated evolution of digital trade has positioned cross-border e-commerce as a transformative force in reshaping global trade structures. This paper investigates the integration between cross-border e-commerce and traditional foreign trade by analyzing four representative enterprise types: platform-based companies, manufacturing firms, trade-oriented enterprises, and individual merchants. Drawing on comparative analysis and case-based evidence, the study explores how enterprises with distinct capabilities respond to integration pressures through strategies in digital transformation, brand localization, sustainable development, and supply chain optimization. The findings reveal differentiated challenges and priorities across enterprise types, yet also identify converging themes such as the adoption of intelligent infrastructure, green logistics, and decentralized governance models. Building on these insights, the paper proposes actionable recommendations to enhance competitiveness, including warehouse digitization, inclusive financial services, and regional brand incubation mechanisms. This study contributes to a more structured understanding of enterprise-level integration logic and offers practical guidance for firms navigating the convergence of digital and traditional trade under conditions of technological acceleration and institutional complexity.

Keywords: Cross-border E-commerce; trade integration; digital transformation; enterprise strategy; global competitiveness.

1. Introduction

The proliferation of the digital economy has redefined global trade structures, with cross-border e-commerce emerging as a key driver through its disintermediation, flexibility, and operational efficiency [1]. Pandemic-induced disruptions in logistics and consumer behavior have further exposed the limitations of traditional foreign trade models, prompting a global shift toward digital integration. Despite growing academic interest, existing research often remains fragmented, lacking comparative analysis across diverse enterprise types. This study addresses that gap by examining four representative categories—platform-based firms, manufacturing enterprises, trade-oriented companies, and individual merchants. Through a multidimensional lens, it investigates strategic approaches to digital transformation, sustainability, branding, and localization. The paper aims to offer both theoretical insight and practical guidance to inform policy and enterprise-level decisions in the context of China's evolving role in international commerce.

2. Background to the integration of cross-border e-commerce and foreign trade

2.1. Cross-border e-commerce development trend

Cross-border e-commerce has emerged as a vital channel for international trade, driven by advancements in internet infrastructure, electronic payment systems, and data-driven logistics. It has significantly reduced transaction costs and increased operational efficiency, accelerating market integration across borders [2]. In China, the total value of cross-border e-commerce imports and exports reached 2.63 trillion yuan in 2024, with the share of independent brand exports steadily rising—signaling structural optimization and the diversification of export channels.

Table 1. Cross-border e-commerce import and export volume and trade share in China (2015–2024)

Year	Cross-border E-commerce Import & Export (Trillion RMB)	YoY Growth Rate	Share of Total Trade
2015	0.35	—	1%
2016	0.6	71.4%	—
2017	0.9024	50.4%	—
2018	1.347	49.3%	—
2019	1.69	25.5%	—
2020	1.69	0%	—
2021	1.92	13.6%	4.9%
2022	2.11	9.9%	5%
2023	2.38	12.8%	5.7%
2024	2.63	10.5%	—

Nonetheless, intensified price competition and high platform subsidies have compressed corporate profits, compelling enterprises to upgrade their supply chains and transition to digitally coordinated business models [3]. As cross-border e-commerce reshapes the global trade landscape, digital readiness is becoming a critical source of international competitiveness [4].

2.2. Definition and characteristics of foreign trade

Foreign trade involves transnational exchanges of goods and services under the constraints of legal, political, and cultural heterogeneity. It remains essential for resource allocation and industrial upgrading, yet is highly susceptible to external disruptions such as shipping delays, exchange rate volatility, and geopolitical tension. These complexities demand higher resilience from firms navigating global markets [5].

2.3. Drivers of integration

The integration of cross-border e-commerce and traditional trade is propelled by both internal and external forces. Internally, the application of AI and big data has enabled precise consumer targeting and real-time supply chain adjustments [4], while SMEs benefit from lower market-entry thresholds through digital platforms. Externally, policy support, globalization, and IoT-enhanced logistics systems have enhanced delivery speed and transaction traceability [6], creating a favorable environment for convergence. Moreover, blockchain infrastructure has emerged as a strategic enabler of supply chain transparency, contract automation, and fraud prevention in integrated trade environments [7].

3. Typical Enterprise Case: TikTok and Cross-border E-commerce

TikTok exemplifies platform-led integration in global digital trade. Through TikTok Shop and integrations with platforms such as Shopify, it enables live-stream-based product promotion and direct-to-consumer conversion. Its AI-powered recommendation system, localized content strategy, and partnerships with regional creators—especially in Southeast Asia and Latin America—facilitate cultural alignment and user retention. Investments in payment and logistics infrastructure further support seamless fulfillment. TikTok’s ecosystem not only reduces intermediation costs but also empowers emerging brands to internationalize, positioning the platform as a strategic driver in the evolving cross-border e-commerce landscape.

4. Path for enterprises to integrate cross-border e-commerce and foreign trade

To better understand the practical implications of cross-border e-commerce integration, this section focuses on four types of enterprises: platform-based companies, manufacturing firms, trade-oriented enterprises, and individual merchants. These categories are selected for their structural

differences, strategic priorities, and typical roles in the digital trade ecosystem. Together, they offer a representative cross-section of China’s foreign trade actors and allow for a comparative analysis of how enterprises with varied capabilities and operational models respond to integration challenges and opportunities.

4.1. Platform-based companies

4.1.1 Structural Features and Key Challenges

Platform-based enterprises benefit from large user bases, data resources, and technological strength but face considerable challenges in international expansion. Legal compliance, policy restrictions, and strong local competition often require firms to localize data governance, content control, and payment systems. Moreover, evolving regulations on AI and big data demand enhanced oversight. In some markets, foreign platforms encounter limitations or unequal treatment due to policy favoritism toward domestic players [6]. These pressures necessitate a careful balance of compliance, localization, and innovation in global platform strategies.

4.1.2 Strategic Responses of Platform Enterprises

To remain competitive, platforms must develop integrated strategies that align infrastructure, regulation, and market adaptation. AI and big data support personalized marketing and user engagement, while blockchain and IoT technologies improve fulfillment visibility and operational transparency [8].

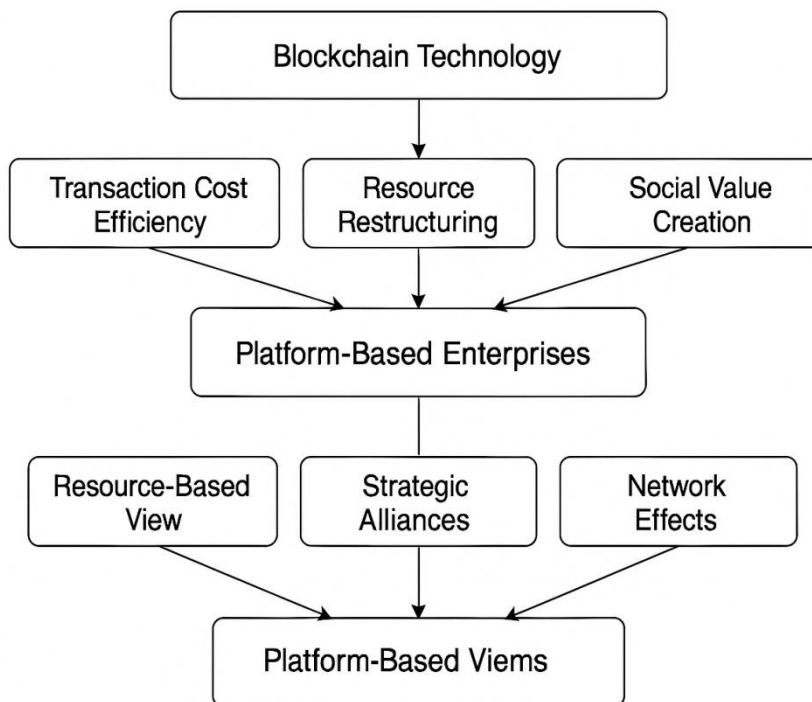


Fig. 1 Blockchain-enabled transformation of platform-based enterprise

Firms must also address institutional diversity through tailored content moderation, localized payment models, and region-specific compliance systems. Building regional creator networks and facilitating SME participation enhances platform stickiness and brand globalization. Incorporating sustainability—via green packaging and low-carbon logistics—further aligns with global trends. Emerging technologies such as Web3.0 and smart contracts may also unlock decentralized, user-centered platform models.

These strategies enable platforms to scale globally while maintaining adaptability, regulatory alignment, and long-term resilience.

4.2. Manufacturing companies

4.2.1 Structural Features and Key Challenges

Manufacturing companies possess core strengths in supply chain control and cost efficiency but face obstacles in branding and localization. Many rely on B2B export models and lack direct consumer access, which limits brand visibility under DTC (direct-to-consumer) models. Additionally, effective branding requires marketing expertise, user engagement, and cultural adaptation—areas where manufacturers often lack experience. Once abroad, they must also overcome challenges in consumer preferences, languages, and after-sales services. For example, Western markets emphasize sustainability and storytelling, while Southeast Asia favors affordability. Without a clear differentiation strategy, even cost-competitive manufacturers struggle to establish a foothold.



Fig. 2 Localization pathway for DTC-based cross-border brand expansion

4.2.2 Strategic Responses of Manufacturing Companies

To succeed in cross-border e-commerce, manufacturers must upgrade production and branding capabilities. Digital manufacturing—using AI, 5G, and automation—enhances flexibility, supports small-batch customization, and reduces inventory risk [4, 9]. Leveraging services like Amazon FBA and Alibaba International enables localized warehousing and faster order fulfillment.

Sustainability is another priority. Firms should adopt biodegradable packaging, low-carbon production, and international green certifications to align with market standards and enhance brand credibility. Direct-to-consumer platforms allow them to bypass traditional distributors and improve customer loyalty through subscription models and social commerce.

Brand-building efforts must reflect regional cultures. Companies can use short-form videos, KOL partnerships, and user-generated content to connect with target audiences [10]. Localized marketing strategies tailored to specific markets increase relevance and consumer recognition.

By integrating digital tools, logistics systems, and localized communication, manufacturing firms can transform from backend producers to globally competitive consumer-facing brands.

4.3. Trade-oriented enterprises

4.3.1 Structural Features and Key Challenges

Trade-oriented enterprises traditionally operate as intermediaries in export supply chains. However, the rise of cross-border e-commerce has diminished their channel advantages, as manufacturers increasingly sell directly to consumers. The shift toward fragmented, high-frequency orders requires greater inventory agility and logistics coordination. Yet many trading firms lag in digital marketing, lack end-user engagement, and have limited insight into overseas consumer trends. This places them at a disadvantage in terms of brand visibility and conversion compared to platform-driven or manufacturer-led models.

4.3.2 Strategic Responses of Trade-oriented Enterprises

To remain competitive, trading enterprises must digitize their operations and reposition themselves within the e-commerce ecosystem. Data-driven product selection and inventory planning can enhance responsiveness, while AI-powered customer service and automated translation tools reduce communication friction. In sustainable trade, green certifications and recycling-oriented practices (e.g., trade-in models) help meet environmentally conscious consumer expectations.

Localization is also key. Establishing overseas warehouses shortens delivery times, reduces transportation costs, and improves replenishment efficiency. Intelligent inventory systems can further streamline cross-border logistics.

Digital marketing channels have begun to replace traditional trade shows as primary promotional platforms [11]. By leveraging social media for targeted advertising, trading companies can expand their reach and improve brand conversion rates.

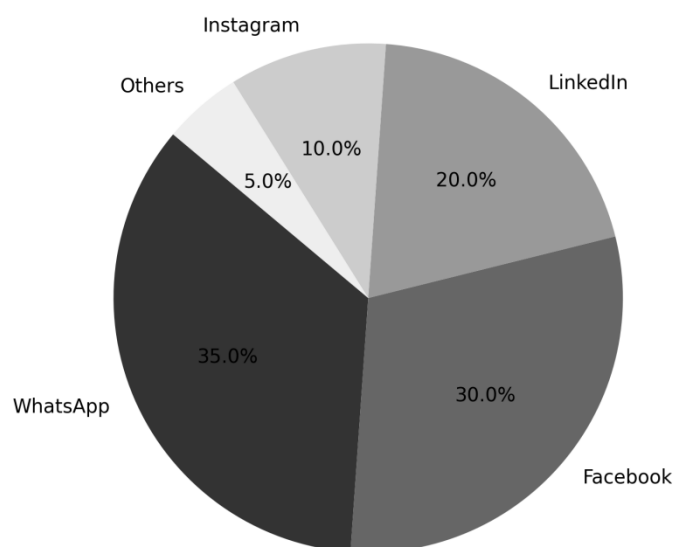


Fig. 3 Digital marketing channel usage by Chinese foreign trade enterprises in 2023

Through digital integration, green repositioning, and localized fulfillment, trade-oriented enterprises can revitalize their relevance and maintain competitiveness in an increasingly platform-centric global trade environment.

4.4. Individual merchants

4.4.1 Structural Features and Key Challenges

Individual merchants play a growing role in cross-border e-commerce due to low entry thresholds on digital platforms. However, limited capital, technical resources, and supply chain capacity constrain their scalability. High platform dependency—such as reliance on third-party traffic and

policy stability—exposes them to rising commission fees and algorithm-driven visibility fluctuations [6]. Moreover, product homogenization, intense competition, and weak brand identity result in low customer retention. The inability to accumulate proprietary customer data further weakens long-term growth potential.

4.4.2 Strategic Responses of Individual Merchants

To overcome these challenges, individual merchants must pursue strategies that balance cost efficiency, product uniqueness, and brand differentiation. Automated marketing tools, such as Facebook Ads and Google Shopping, allow precise targeting and budget control. Merchants can also leverage niche positioning, such as eco-friendly product lines, to tap into value-driven consumer segments and obtain relevant sustainability certifications.

Building independent websites enhances control over customer data and enables direct engagement, reducing reliance on platform algorithms. Coupling these with social media marketing funnels improves repurchase rates and brand loyalty.

Content creation is another critical asset. Video storytelling, product crafting showcases, and value-centric narratives humanize brands and build emotional connections with audiences. For example, handmade or sustainability-focused merchants can use Vlogs and behind-the-scenes content to strengthen transparency and trust [12].

Ultimately, by integrating marketing automation, value-based branding, and multi-channel outreach, individual merchants can build sustainable businesses within the platform economy while gradually developing autonomous digital identities [13].

5. Recommendations for countermeasures

To facilitate deeper integration between cross-border e-commerce and traditional foreign trade, enterprises should adopt a multidimensional approach that enhances operational efficiency while supporting long-term strategic adaptability. Strengthening the digital infrastructure of supply chains is a foundational priority. The deployment of technologies such as blockchain and the Internet of Things enables real-time monitoring, improves fulfillment transparency, and enhances traceability in complex global logistics networks [7, 8]. These capabilities are particularly important in maintaining trust and efficiency across increasingly fragmented international markets.

At the financial level, many firms—especially small and medium-sized enterprises—require access to more inclusive, technology-enabled financing mechanisms. The development of cross-border digital payment systems, alongside supply chain finance and data-driven credit models, can help alleviate liquidity constraints and support enterprise growth in dynamic e-commerce environments.

Brand development in overseas markets also requires deliberate structural support. Enterprises can benefit from establishing local incubation centers that provide compliance assistance, user research capabilities, and tailored product testing. Collaborations with academic institutions and professional associations are also vital in cultivating talent with the cultural and operational competencies necessary for international engagement.

Incorporating sustainability into cross-border strategies is increasingly indispensable. Enterprises should adopt recyclable packaging, promote low-emission transportation, and align product development with global environmental standards. These efforts not only satisfy growing regulatory requirements but also appeal to environmentally conscious consumers and enhance long-term brand equity.

Optimizing international infrastructure is equally essential. Strategic placement of intelligent warehousing networks improves delivery speed, inventory responsiveness, and return processing, all of which are critical to user satisfaction. Strengthening reverse logistics systems further reinforces customer trust and ensures a more resilient service experience.

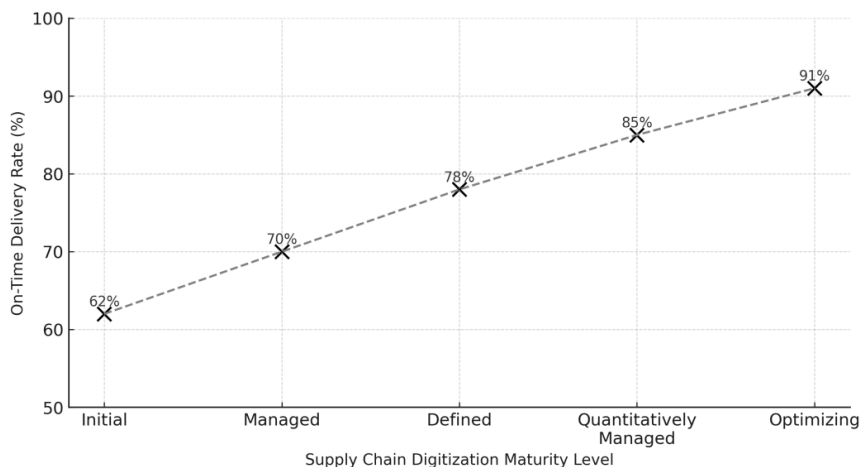


Fig. 4 Impact of supply chain digitization maturity on fulfillment capability

Figure 4 illustrates how varying levels of supply chain digitization affect fulfillment performance, emphasizing the importance of investing in integrated digital infrastructure at each operational node.

Collectively, these recommendations reflect the need for enterprises to move beyond reactive adjustments and toward proactive transformation. Emphasizing digital capacity, financial inclusivity, localized engagement, ecological responsibility, and logistical optimization will be key to maintaining competitiveness in the rapidly evolving global trade ecosystem.

6. Conclusion

This study examined the integration of cross-border e-commerce and traditional foreign trade through a comparative analysis of four enterprise types: platform-based companies, manufacturing firms, trade-oriented enterprises, and individual merchants. By analyzing their respective strategies in digital transformation, sustainable development, localized operations, and brand building, the research identified both common patterns and distinct challenges across different organizational models.

The findings demonstrate that while integration pathways vary by enterprise structure and resource base, key success factors consistently include supply chain digitization, institutional adaptability, green practices, and consumer-centric branding. Many firms have already begun implementing intelligent logistics systems, overseas warehouse networks, and DTC-oriented strategies, signaling that this convergence is not merely theoretical, but increasingly actionable and outcome-driven.

Accordingly, the paper contributes to the theoretical understanding of how digitally enabled trade ecosystems evolve across heterogeneous market actors. It also offers practical guidance for enterprises and policymakers seeking to enhance global competitiveness in a rapidly changing trade environment. The proposed framework is adaptable to firms with differing capacities, allowing for strategic flexibility in policy design and business implementation.

Future research may extend this framework by incorporating service-based enterprises, examining governance structures within platform ecosystems [14], or conducting localized case studies that account for sectoral and regional diversity. As technologies such as AI, blockchain, and Web3.0 continue to redefine digital commerce, further inquiry into their implications for trade integration will be critical. Such work can deepen both academic and practical insights into how innovation, regulation, and institutional coordination coalesce in the next stage of global trade development.

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