

Research on Cross-border E-commerce Empowering the Transformation and Upgrading of Dongguan's Manufacturing Industry

Shoufei Su¹, Juan Zhang^{2*}

¹Guangdong Vocational College of Hotel Management, Dongguan 523960, Guangdong Province, China

²Guangdong Innovative Technical College, Dongguan 523960, Guangdong Province, China

*Corresponding author: Juan Zhang, Sophia.Zhang@outlook.com

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Abstract: With the rise of the global digital economy and the deep integration of digital technology into traditional manufacturing operations, cross-border e-commerce provides a new commercial model and pathways for transforming and upgrading Dongguan's traditional manufacturing industry. It also offers perspectives for enhancing the integration of online and offline operations while advancing the industrial Internet process. This study examines the impact of cross-border e-commerce on Dongguan manufacturing, highlighting its role in improving production efficiency, expanding international markets, and driving industrial upgrading through product enhancement, supply chain optimization, and innovative business models. By incorporating practical cases and data analysis from Dongguan enterprises, this study investigates the benefits and challenges of cross-border e-commerce in the transformation of the manufacturing industry, aiming to offer a reference for enterprise digital transformation and global competitive strategies.

Keywords: Cross-border e-commerce; Dongguan manufacturing; Transformation and upgrading; Case study

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1. Introduction

Dongguan, known as a manufacturing capital, has earned the title of “World Factory” due to its comprehensive industrial chain, robust manufacturing capabilities, and convenient transportation. However, as the global division of the industrial chain shifts, external trade frictions increase, global demand fluctuates, and labor costs rise, enterprises face an increasingly challenging competitive environment. The rapid rise of cross-border e-commerce and its widespread acceptance by global consumers have offered Dongguan's manufacturing industry a new breakthrough path ^[1].

As a critical facet of the digital economy, cross-border e-commerce not only accelerates the transformation and upgrading of Dongguan's manufacturing sector but also enhances its global competitiveness ^[2]. Through

cross-border e-commerce, enterprises can directly access international end markets, leveraging digital and intelligent technologies to improve operational efficiency. This enables more precise market positioning and resource allocation ^[3].

This paper seeks to explore how cross-border e-commerce empowers Dongguan manufacturing. By analyzing case studies and data from local enterprises, it aims to reveal the profound impact of cross-border e-commerce on the industry in Dongguan.

2. The relationship between cross-border e-commerce and manufacturing transformation

Cross-border e-commerce refers to a business model where enterprises sell goods directly to overseas consumers through Internet technology. Compared to traditional foreign trade models, cross-border e-commerce reduces information asymmetry, shortens supply chains, and overcomes national barriers, enabling enterprises to engage directly with global end consumers ^[4]. For the manufacturing industry, cross-border e-commerce serves not only as a sales channel but also as a catalyst for disruptive changes in product design, supply chain management, market expansion, and consumer behavior analysis. It reshapes the management practices of traditional manufacturing through innovative business models. Cross-border e-commerce promotes manufacturing transformation in the following ways:

- (1) Direct sales model: Manufacturing enterprises can sell products directly to global consumers via cross-border e-commerce platforms. This shortens the distribution chain, allowing manufacturers to bypass intermediaries and increase profit margins by directly connecting with end consumers.
- (2) Personalized customization: Leveraging big data from cross-border e-commerce platforms, Dongguan manufacturing enterprises can accumulate market feedback, accurately analyze consumer preferences, and develop customized products tailored to differentiated consumer needs.
- (3) Supply chain efficiency: The demands of cross-border e-commerce require enterprises to adopt faster response capabilities, thereby driving optimized supply chain management and enabling end-to-end supply chain integration. This transition forces enterprises to abandon traditional manufacturing and sales-centered operating models, instead fostering the efficient integration of upstream industrial chains and manufacturing processes. This transformation shifts the focus toward a market- and consumer-demand-oriented approach ^[5].

3. Current situation and challenges of Dongguan manufacturing

Dongguan's manufacturing industry benefits from a strong industrial cluster effect and a complete supply chain system, solidifying its important role in the global manufacturing sector. According to the "2022 Dongguan Economic Development Report" ^[6], released by the Dongguan Municipal Government, the total output value of the city's manufacturing industry has surpassed one trillion RMB. Despite its strengths, Dongguan manufacturing faces several challenges:

- (1) Rising labor costs: Increasing labor costs have diminished the competitiveness of the traditional manufacturing model, which has historically relied on low-cost advantages ^[6].
- (2) High dependence on foreign trade: The industry's reliance on foreign trade exposes it to significant risks stemming from global economic uncertainties and trade frictions, which threaten export stability ^[7].

(3) Insufficient technological innovation: Despite its robust manufacturing capabilities, Dongguan's industry remains predominantly focused on original equipment manufacturing (OEM) production. Limited investment in research and development, combined with weak marketing expertise, hampers self-innovation and brand-building capabilities.

Addressing these challenges requires an urgent transformation and upgrading of Dongguan's manufacturing sector. The rise of cross-border e-commerce provides an opportunity to achieve this transformation, offering new pathways for enterprises to access international markets and enhance operational efficiency.

4. Mechanism of cross-border e-commerce empowering Dongguan manufacturing transformation and upgrading

4.1. Market expansion and diversified sales channels

Cross-border e-commerce enables Dongguan manufacturing enterprises to eliminate reliance on intermediaries in traditional foreign trade models and directly connect with global consumers. Platforms such as Alibaba International Station, Amazon, SHEIN, TikTok Shop, and TUME allow these enterprises to accurately target markets and develop products tailored to the specific needs of different consumer segments and regions. This approach not only enhances sales but also mitigates the risks associated with over-reliance on single-market dependencies. It provides enterprises with greater flexibility and proactivity in research and development, production, and marketing.

For instance, an electronic manufacturing enterprise in Dongguan, initially focused on OEM production for globally recognized brands targeting North American and European markets, faced trade uncertainties in these regions. The enterprise responded by shifting its strategy to sell its own branded electronic products directly to Latin American and Southeast Asian markets through cross-border e-commerce platforms. Within two years, the company reported a 50% increase in sales and a 15% higher profit margin compared to traditional foreign trade practices ^[8]. This case exemplifies how cross-border e-commerce facilitates the transition of Dongguan manufacturing enterprises from OEM to OBM models.

4.2. Product upgrading and innovation

Global market data from cross-border e-commerce platforms serves as a critical reference for Dongguan manufacturing enterprises in product upgrading and marketing strategy development. Using big data analytics, enterprises can swiftly evaluate market demands and consumer preferences across different regions, enabling precise product design and innovative marketing strategies.

For example, a personalized custom furniture manufacturer in Dongguan utilized data from the Amazon platform to identify increasing demand for customized furniture in European and American markets. The enterprise subsequently developed customizable furniture products, allowing consumers to choose materials, colors, and sizes through the e-commerce platform. The manufacturing process was adapted to accommodate these customizations flexibly. This approach enhanced product value, resulting in a 30% increase in sales and significantly higher customer satisfaction ^[9].

4.3. Supply chain optimization and intelligence

The demands of cross-border e-commerce necessitate rapid market responses, driving supply chain optimization and intelligent upgrades. Dongguan manufacturing enterprises have leveraged digital technology and cross-

border e-commerce platforms to achieve integrated production, inventory management, and logistics operations. These advancements have led to shorter production cycles, reduced inventory backlogs, and improved supply chain efficiency.

Data from the Dongguan Municipal Bureau of Industry and Information Technology indicates that over 60% of Dongguan manufacturing enterprises engaged in exports via cross-border e-commerce platforms between 2019 and 2021. During this period, average order response times decreased by more than 20%. Additionally, the adoption of digital supply chains increased inventory turnover rates by 15% and reduced logistics costs by 10% ^[10].

5. Data analysis: Achievements of Dongguan manufacturing through cross-border e-commerce transformation

An analysis of recent data on Dongguan manufacturing reveals the significant positive impact and economic contributions of cross-border e-commerce to the industry’s transformation can be seen in **Table 1**.

Table 1. Relevant data on Dongguan manufacturing exports

Year	Total export value of Dongguan manufacturing (billion RMB)	Share of cross-border e-commerce exports	Manufacturing growth rate
2018	800	10%	5.5%
2019	850	15%	6.0%
2020	920	20%	6.8%
2021	1000	25%	7.2%

The data highlights a year-by-year increase in the share of cross-border e-commerce exports, establishing it as a key driver for Dongguan’s manufacturing exports. Concurrently, the steady rise in the manufacturing growth rate underscores the significant role of cross-border e-commerce in propelling the overall upgrading and growth of the manufacturing industry.

6. Challenges of cross-border e-commerce in Dongguan manufacturing transformation

Despite offering substantial development opportunities and transformative potential for Dongguan manufacturing, cross-border e-commerce encounters several challenges in practical application:

6.1. Insufficient technology and talent

The successful integration of cross-border e-commerce into traditional manufacturing necessitates advanced digital capabilities, such as data analysis, supply chain management, and customer service expertise. However, many small and medium-sized enterprises in Dongguan lack adequate technological infrastructure and skilled personnel. In particular, there is a shortage of experienced e-commerce professionals capable of managing operations effectively. According to the Dongguan Manufacturing Development Report, over 50% of enterprises faced technical bottlenecks during their transition to cross-border e-commerce, limiting their ability to fully leverage digital tools ^[11].

6.2. Difficulties in brand building

While cross-border e-commerce offers opportunities to engage with global markets, building an internationally recognized brand remains a challenge for many Dongguan manufacturers. Historically reliant on OEM, many enterprises have limited experience in brand management ^[12]. In the competitive cross-border e-commerce environment, consumer trust in brands significantly influences purchasing decisions. The delay in brand development poses a considerable bottleneck for enterprises aspiring to expand and establish a presence in international markets ^[13].

6.3. Complexity of international policies and laws

Cross-border e-commerce operates within a dynamic international policy landscape, marked by varying tariffs, logistics regulations, and payment systems across different countries. Dongguan manufacturing enterprises must navigate these complexities and address legal and policy-related risks. For instance, U.S.-China trade frictions have had tangible effects on the cross-border e-commerce activities of Dongguan's manufacturers. To achieve a global market presence, these enterprises must complement their digital advancements with legal and management expertise, particularly professionals well-versed in international trade regulations ^[14].

7. Conclusion and suggestions

Enabled by cross-border e-commerce, Dongguan's manufacturing industry has made notable strides in product upgrades, market expansion, and supply chain optimization, leading to enhanced market competitiveness and profit margins. However, challenges persist in the digital transformation process, including a shortage of skilled technical and operational talent, obstacles in brand building, and risks associated with international policies and regulations. To further advance the transformation and upgrading of Dongguan's manufacturing sector, the following recommendations are proposed:

- (1) Strengthen technical training and talent acquisition: The Dongguan government and enterprises should collaborate to enhance digital talent training programs and recruit professionals with expertise in cross-border e-commerce to strengthen the industry's digital capabilities.
- (2) Promote brand building and international operations: Enterprises in Dongguan should capitalize on cross-border e-commerce platforms to focus on brand building, thereby increasing product value and market influence through the development of internationally recognized brands.
- (3) Improve policy support and legal advisory services: The government should provide comprehensive policy support and legal consultation services to assist enterprises in navigating policy and regulatory risks associated with cross-border e-commerce ^[15].

By implementing these measures, Dongguan's manufacturing sector can achieve sustainable, high-quality development within the global digital economy and cross-border e-commerce landscape. This integration of emerging technologies is poised to enhance the competitiveness of traditional manufacturing and elevate its position within the global value chain.

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