Asia Pacific Science Press

Asia Pacific Economic and Management Review
ISSN(O):3005-9275
ISSN(P):3005-9267
Vol. 3 No.4 (2026)

Research on the Impact of Digital Trade Level on High Manufacturing Industry in Guangdong Province

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Abstract: This study uses panel data from 21 prefecture-level cities in Guangdong Province (2014–2023) to construct a comprehensive digital trade development index, considering four dimensions: digital infrastructure, technological capability, trade potential, and trade capacity. The high-quality development of the manufacturing industry is assessed across five dimensions: innovation, structural optimization, green and low-carbon initiatives, economic performance, and openness to external markets. The impact of digital trade on manufacturing quality is empirically evaluated using a two-way fixed effects model. Benchmark regression results show that a one-unit increase in Guangdong's digital trade level is associated with a 0.739-unit increase in the manufacturing industry's high-quality development index. Heterogeneity analysis identifies a pronounced development gap between the Pearl River Delta and the eastern, western, and northern regions of Guangdong, highlighting uneven regional benefits from digital trade. Finally, the study recommends targeted strategies to advance the digital transformation of manufacturing and support coordinated regional development, emphasizing: 1) provincial-level institutional development; 2) high-end industrial leadership in the Pearl River Delta; and 3) infrastructure improvements in the eastern, western, and northern regions of Guangdong.

Keywords: Digital Trade; High-Quality Development of Manufacturing Industry; Two-Way Fixed Effects; Guangdong Province

Published: Jul 17, 2026

DOI: https://doi.org/10.62177/apemr.v3i4.1581

1. Introduction

The latest wave of global digital technology iteration is accelerating changes in international trade patterns, with digitalization increasingly serving as the primary driver for the transformation and upgrading of the global manufacturing sector. China's manufacturing sector has transitioned from rapid quantitative expansion to high-quality connotative development, guided by the "Made in China 2025" initiative, which sets the overall direction for enhancing quality and efficiency. Guangdong Province, a leader in domestic manufacturing and international trade, possesses a comprehensive manufacturing system. The Guangdong Province "14th Five-Year Plan" for the manufacturing sector further specifies development tasks related to digitalization and intelligent transformation.

With the widespread adoption of big data, 5G, and artificial intelligence, digital trade has utilized digital platforms to restructure the global industrial division of labor, emerging as a new driving force that empowers the real economy. By leveraging its geographical and industrial advantages, Guangdong leads the nation in digital trade scale. By 2022, Guangdong's total digital trade volume reached US$82.05 billion, ranking second nationally in import and export scale.

However, significant disparities in digital infrastructure and industrial foundation exist between the Pearl River Delta and the eastern, western, and northern regions of Guangdong, resulting in marked regional differences in how digital trade empowers the manufacturing sector.

Existing studies primarily rely on national and provincial panel data for general analyses, with few detailed empirical studies focused on the 21 prefecture-level cities of Guangdong, resulting in a lack of quantitative research that accounts for regional differentiation characteristics. Accordingly, this paper utilizes panel data from 2014 to 2023 for the 21 prefecture-level cities in Guangdong, computes two core indices for digital trade and high-quality development of the manufacturing sector using the entropy method, quantifies the impact of digital trade on local manufacturing quality via a two-way fixed effects model, and provides empirical evidence and policy recommendations to guide the digitalization of manufacturing across Guangdong. The paper's marginal contributions are twofold: first, it establishes evaluation indicators for digital trade and high-quality manufacturing development at the prefecture-level city scale tailored to Guangdong's context; second, it conducts empirical analyses considering regional development disparities in Guangdong, addressing the lack of regional specificity in prior research.

2. Literature Review

2.1 Research related to Digital Trade

The concept of digital trade in China emerged in 2009. Initially, Tang Hongjuan (2009) defined digital trade as a novel business model focused on transactions of digital products, with research scope confined to traditional e-commerce. With the popularization of mobile internet, Li Zhongmin et al. (2014) broadened the definition of digital trade to include the entire industry chain. Ma Shuzhong et al. (2018), referencing the official U.S. definition, proposed that digital trade facilitates intelligent manufacturing by efficiently exchanging physical goods, digital products, and information via the internet. Following the commercial launch of 5G, the "White Paper on the Development of Digital Trade (2019)" by the China Academy of Information and Communications Technology defined digital trade to encompass not only ICT-based physical trade but also digital service trade delivered through information and communication networks. Li Jun et al. (2021) argue that digital trade is a form of commerce that relies on information network technologies, employs digital platforms as intermediaries, and depends on cross-border data flows.

The absence of a clear definition of digital trade in China has led to persistent disagreements over how to measure its development level. Yue Yunsong and Zhang Chunfei (2021) highlighted data conflicts in measuring digital order trade arising from divergent conceptualizations and the omission of the digital service sector in evaluating digital delivery trade. Gao Xiaoyu et al. (2021) employed the fusion ratio method to assess the development level of digital trade. Jia Huaiqin (2021) proposed a "dual-element, three-ring" framework, establishing a three-tier definition of digital trade based on goods and services to evaluate its development level.

2.2 Research on High-quality Development of Manufacturing Industry

Made in China 2025 (2015) emphasizes that the development of China's manufacturing sector should focus on improving quality and efficiency in accordance with the principles of innovation-driven growth, quality prioritization, green development, structural optimization, and talent cultivation. Lv Tie et al. (2019) summarized high-quality manufacturing development into four dimensions: coordination between supply and demand, efficient utilization of the manufacturing system, regional coordination, and integrated development among the agricultural, industrial, and service sectors. Guo Chaoxian (2019) argued that high-quality manufacturing development is achieved through the integrated development of the manufacturing and service sectors. Yang Haochang et al. (2021) proposed that high-quality development can be analyzed from two dimensions: quantity and quality. Most domestic studies evaluating manufacturing development are based on the overarching requirements outlined in Made in China 2025. Zhao Qing and Zeng Haijian (2020) constructed an evaluation system based on economic performance, innovation-driven development, and green development, drawing on the framework of Made in China 2025 and the availability and measurability of relevant data. Based on policies promoting the deep integration of the Internet and manufacturing, Luo Xubin et al. (2020) evaluated manufacturing development from the perspectives of digitalization, networking, intelligence, and greening. In the context of industrial relocation and increasing trade barriers following the trade war, Qu Li et al. (2021) emphasized that risk prevention and control are critical to the sustainable development of the manufacturing sector. Wang Fang et al. (2022) evaluated the level of high-quality manufacturing development based on indicators of green efficiency and production structure. Jiang Xiaoguo et al. (2022) developed a comprehensive evaluation system for high-quality manufacturing development based on technological innovation, industrial upgrading, green development, industrial integration, operational efficiency, and brand building.

2.3 Research on the Correlation between Digital Trade and High-quality Development of Manufacturing industry

Domestic scholars have conducted extensive research on the impact and mechanisms of digital trade on the manufacturing sector. Wang Ruirong (2021) indicated that digital technologies can empower the entire manufacturing value chain and facilitate the transformation of industrial organizations. Kanazawa Tiger et al. (2022) further demonstrated that digital trade indirectly promotes high-quality manufacturing by fostering technological progress. Huang Ling et al. (2023) challenged the linear analytical framework, revealing that digital trade exhibits threshold effects in the manufacturing sector, with its promotive impact fully realized only after surpassing a specific critical value. Wang Shanshan (2024) extended the study of threshold effects from an institutional perspective, emphasizing that intellectual property protection plays a key regulatory role in the process by which digital trade influences the green transformation of manufacturing.

Foreign scholars examined the impact of digital technologies on manufacturing earlier, providing a theoretical foundation for subsequent research. Arya B. (2007) found that integrating cross-organizational collaboration with digital technologies facilitates the adoption of circular economy practices in manufacturing firms. Andrea Zangiacomi et al. (2019) analyzed the significant challenges faced by micro-enterprises in digital transformation within the manufacturing sector. Aoxia Chen (2020) explored specific pathways through which digital technologies affect manufacturing firms. Joakim Björkdahl (2020) highlighted that most current digital practices in manufacturing primarily focus on improving short-term production efficiency, with insufficient attention to innovation potential.

2.4 Brief Commentary

Existing literature indicates that both domestic and international research have generated substantial insights into the conceptualization of digital trade, the measurement of high-quality manufacturing, and the interactions between these two domains. Foreign studies generally emphasize micro-level enterprise cases, whereas domestic research predominantly addresses macro-level regional analyses. Nevertheless, existing research demonstrates several limitations. First, empirical analyses predominantly rely on provincial-level data, lacking detailed quantification for prefecture-level cities in Guangdong Province. Second, differentiated assessments have not accounted for the natural economic heterogeneity of the Pearl River Delta, as well as the eastern, western, and northern regions of Guangdong. Third, there is a scarcity of evaluation frameworks specifically tailored to the characteristics of local industries in Guangdong. To address these gaps, this study employs panel data from 21 prefecture-level cities in Guangdong Province to conduct empirical analysis, thereby providing detailed evidence at the regional level.

3. Study Design

3.1 Variable Selection and Indicator Construction

This study employs panel data from 21 prefecture-level cities in Guangdong Province covering the period 2014–2023 to investigate the impact of digital trade development on the high-quality development of the manufacturing sector. The study comprises 210 observations, with all original indicators obtained from the Guangdong Statistical Yearbook, the Statistical Yearbooks of prefecture-level cities, and publicly available data from the Department of Industry and Information Technology and the Department of Commerce of Guangdong Province.

3.1.1 Explained Variable

High-Quality Manufacturing Development Index (HQMI): Building on the indicator construction methodology proposed by scholars such as Qu Li , we developed an indicator system to measure high-quality manufacturing development across five dimensions: innovation, structural optimization, green and low-carbon development, economic performance, and openness to external markets. The high-quality manufacturing development level for each city was calculated using a weighted approach based on the entropy method. The detailed indicator structure is presented in Table 1:

Table 1. Indicators for high-quality development of manufacturing industry

final indicator	first-level indicator	secondary indicator	attribute
High-quality development of manufacturing industry	innovation	The proportion of education expenditure in the general public budget expenditure of the city (%)	Positive
		The proportion of technology expenditure in the general public budget expenditure of the city (%)	Positive
		The proportion of employees in the computer services and software industry in the total workforce (%)	Positive
		Ratio of R&D personnel to the total number of on-the-job employees in the manufacturing industry (%)	Positive
		Total telecommunication business volume (100 million yuan)	Positive
		Mobile phone users (10,000 households)	Positive
		Total number of patent applications (unit)	Positive
	structural optimization	Proportion of high-tech manufacturing industry	Positive
		Proportion of advanced manufacturing industry	Positive
	green and low-carbon development	Utilization rate of general industrial solid waste (%)	Positive
		Proportion of energy conservation and environmental protection in general public budget expenditure of the city (%)	Positive
		Growth rate of energy consumption per unit of industrial added value (%)	negative
		Electricity consumption per unit of GDP (10,000 yuan)	negative
		Emission of sulfur dioxide per unit of industrial added value (10,000 tons/100 million yuan)	negative
	economic benefits	The proportion of manufacturing employees in the total number of employed individuals in society (%)	Positive
		Ratio of total industrial profits to main business income (%)	Positive
		Proportion of industrial added value	Positive
	openness to the outside world	The proportion of total import and export volume to GDP (%)	Positive

3.1.2 Core Explanatory Variable

Digital Trade Development Level (DTDL). Building on the indicator frameworks proposed by Feng Zongxian (2022) and Zhang Weihua (2020), this study constructs the DTDL index using four primary dimensions—digital infrastructure, digital technology capability, digital trade potential, and digital trade capacity—and 11 corresponding secondary indicators. The detailed indicator system is presented in Table 2:

Table 2. Indicators of digital trade development level

final indicator	first-level indicator	secondary indicator	attribute
Level of development of digital trade	digital infrastructure	Number of mobile phone users (10,000 households)	Positive
		Internet broadband access users (10,000 households)	Positive
	digital technology level	R&D personnel of industrial enterprises above designated size(person)	Positive
		R&D expenditure of industrial enterprises above designated size (10,000 yuan)	Positive
		Number of patent applications (pieces)	Positive
		Employees in the information transmission, software, and information technology service industries (in thousands)	Positive
	digital trade potential	E-commerce transaction volume (10,000 yuan)	Positive
		Total telecommunications services per capita (%)	Positive
	digital trade capacity	The proportion of total import and export volume to GDP (%)	Positive
		Per capita GDP (yuan)	Positive
		Total retail sales of consumer goods (10,000 yuan)	Positive

3.1.3 Control Variable

Economic Development Level (PGDP). The logarithm of per capita GDP is used to represent the overall economic fundamentals of a region, which directly influence manufacturing consumption demand and industrial upgrading. This variable is included as a control based on previous studies.

Openness (OPEN): Calculated as total import and export volume divided by GDP, this indicator reflects Guangdong Province's dependence on foreign trade. It is included as a control variable to mitigate potential confounding effects of foreign trade scale on the regression analysis of digital trade and manufacturing development.

Research and Development Investment (RDI): Defined as the ratio of R&D expenditure of industrial enterprises above a designated size to GDP, RDI is a critical driver of technological progress and industrial upgrading. Controlling for this variable helps reduce potential confounding effects.

Urbanization Level (URBAN). Calculated as the ratio of the urban permanent resident population to the total population, urbanization can promote digital trade development and facilitate the upgrading of the manufacturing sector. It is therefore included as a control variable.

Government Involvement Level (GMSP): Measured as the logarithm of local general public financial expenditure, this variable reflects the degree of government intervention, which may influence the digital trade environment and manufacturing transformation through infrastructure provision and industrial subsidies.

3.2 Econometric Model Design

This study employs a two-way fixed effects panel model to account for unobserved city-specific characteristics that are constant over time and time-specific shocks that are common across cities, by including both city and time fixed effects. The model specification is presented as follows:

$$HQMI_{it} = \beta_0 + \beta_1 DTDL_{it} + \eta X_n + \varepsilon_{it} \tag{1}$$

In Equation (1), HQMI denotes the high-quality development level of the manufacturing sector, DTDL denotes the development level of digital trade, and X represents the vector of control variables. The subscripts i and t correspond to city and year, respectively. β_1 is the primary coefficient of interest, β_0 represents the intercept, and ε_{it} denotes the random error term.

4. Empirical Research Results

4.1 descriptive Statistics

This study employs panel data from 21 prefecture-level cities in Guangdong Province covering the period 2014–2023, comprising a total of 210 valid observations. The descriptive statistics for all variables are presented in Table 3.

Table 3. Descriptive statistics

VarName	Obs	Mean	SD	Median	Min	Max
HQMI	210	0.19	0.13	0.140	0.069	0.793
DTDL	210	0.09	0.13	0.038	0.011	0.582
PGDP	210	10.99	0.56	10.856	9.917	12.182
OPEN	210	42.56	40.45	25.184	3.415	178.387
RDI	210	0.012	0.011	0.009	0.002	0.051
URBAN	210	64.96	18.83	57.710	39.010	100.000
GMSP	210	6.10	0.78	5.946	4.674	8.520

The dependent variable, HQMI, has a mean value of 0.190 and a median value of 0.140, indicating a positively skewed distribution in which a small number of relatively high observations increase the overall mean. Its standard deviation is 0.130, and the maximum value exceeds the minimum value by more than eleven times, suggesting substantial disparities in the level of high-quality manufacturing development across Guangdong Province.The core explanatory variable, DTDL, has a mean of 0.090 and a median of 0.038, also exhibiting a positively skewed distribution. The standard deviation of DTDL is 0.130, with values ranging from 0.011 to 0.582, reflecting considerable variation in digital trade development among prefecture-level cities.Among the control variables, the standard deviation of economic development level (PGDP) is 0.560, indicating notable differences in economic development across prefecture-level cities. The standard deviation of openness (OPEN) is 40.450, indicating substantial heterogeneity in the degree of external openness across cities. Some cities exhibit a high level of trade openness, whereas others remain relatively less open. Research and development investment (RDI) remains relatively low overall, with limited variation across cities. Urbanization levels (URBAN) vary considerably across the sample cities, whereas government involvement (GMSP) exhibits relatively limited variation.Overall, all variables exhibit sufficient variation, providing a solid empirical basis for the subsequent regression analyses.

4.2 Benchmark Regression Analysis

A stepwise regression analysis was conducted by sequentially incorporating control variables, and the results are reported in Table 4. In the full model, the estimated coefficient of DTDL is 0.739, indicating that a one-unit increase in digital trade development is associated with a 0.739-unit increase in the level of high-quality manufacturing development. This result suggests that digital trade significantly promotes the high-quality development of the manufacturing sector.Among the control variables, government involvement (GMSP) is significantly positive at the 1% level, suggesting that increased public expenditure contributes to regional high-quality development. In contrast, the coefficient of urbanization (URBAN) is significantly negative at the 5% level, indicating that urbanization has not yet been effectively transformed into a driver of high-quality manufacturing development. One possible explanation is that some prefecture-level cities have prioritized population expansion while industrial support has lagged behind, resulting in urban expansion that outpaces industrialization. Economic development (PGDP) exhibits a significantly negative coefficient in Models (2)–(4), but loses statistical significance after additional control variables are introduced. This finding may reflect the fact that economically advanced regions have entered a later stage of industrial transformation, characterized by a declining share of traditional manufacturing and a reallocation of resources toward the service sector, which may temporarily weaken manufacturing-related development indicators.Openness (OPEN) remains statistically insignificant throughout the models. This may be attributable to Guangdong's long-established foreign trade sector, which is characterized by a relatively high share of traditional processing trade and diminishing trade-related advantages, thereby limiting its contribution to manufacturing upgrading. Similarly, the coefficient of R&D investment (RDI) is statistically insignificant, possibly because the conversion of R&D investment into tangible manufacturing outcomes remains relatively inefficient in Guangdong Province.

Table 4. Benchmark regression analysis

	HQMI(1)	HQMI(2)	HQMI(3)	HQMI(4)	HQMI(5)	HQMI(6)
DTDL	0.856***	0.823***	0.788***	0.965***	0.965***	0.739***
	(6.16)	(5.98)	(5.91)	(6.79)	(6.80)	(5.33)
PGDP		0.0484**	0.0202	0.0253	0.0545	-0.0419
		(2.50)	(1.00)	(1.15)	(1.59)	(-1.14)
OPEN			-0.00119***	-0.00172***	-0.00172***	-0.000447
			(-3.79)	(-4.53)	(-4.54)	(-1.05)
RDI				-1.529	-1.254	0.592
				(-0.94)	(-0.76)	(0.38)
URBAN					-0.00343	-0.00606**
					(-1.11)	(-2.08)
GMSP						0.134***
						(5.23)
_cons	0.110***	-0.419**	-0.0555	-0.0832	-0.186	0.170
	(8.20)	(-1.98)	(-0.25)	(-0.34)	(-0.71)	(0.67)
N	210	210	210	210	210	210
r2	0.168	0.195	0.252	0.340	0.345	0.439

Note:***p<0.01,**p<0.05,*p<0.1

4.3 Robustness Test

Given the high sensitivity of the entropy method to outliers, measurement errors may occur when constructing indices with multiple indicators. To mitigate this issue, the Digital Trade Development Level (DTDL) was recalculated using the principal component analysis (PCA) method. The regression results based on the PCA-recalculated DTDL are presented in Table 5.

Table 5. Robustness test

	HQMI(1)	HQMI(2)	HQMI(3)	HQMI(4)	HQMI(5)	HQMI(6)
DTDL	0.111***	0.0938***	0.108***	0.158***	0.157***	0.107***
	(3.38)	(2.80)	(3.35)	(4.36)	(4.32)	(3.14)
PGDP		0.0452**	0.00854	0.00601	0.0314	-0.0733*
		(2.13)	(0.39)	(0.25)	(0.84)	(-1.91)
OPEN			-0.00143***	-0.00204***	-0.00203***	-0.000442
			(-4.30)	(-4.79)	(-4.78)	(-0.94)
RDI				-1.168	-0.912	1.275
				(-0.65)	(-0.50)	(0.75)
URBAN					-0.00296	-0.00618**
					(-0.89)	(-2.01)
GMSP						0.156***
						(5.89)
_cons	0.190***	-0.307	0.157	0.228	0.138	0.448
	(55.80)	(-1.31)	(0.63)	(0.83)	(0.47)	(1.65)
N	210	210	210	210	210	210
r2	0.0571	0.0794	0.163	0.242	0.245	0.379

As shown in Table 5, the coefficient of the Digital Trade Development Level (DTDL) remains positive and statistically significant at the 1% level after replacing the original index with the PCA-based measure. Although the magnitude of the coefficient changes slightly, its sign remains unchanged. Furthermore, the statistical significance of the control variables is largely consistent with the baseline regression results, further confirming the robustness and reliability of the main findings.

4.4 Endogeneity Test

To address potential endogeneity arising from bidirectional causality, this study employs the one-period lag of the Digital Trade Development Level (L.DTDL) as an instrumental variable in a two-stage least squares (2SLS) regression, with the results reported in Table 6. In the first stage, the coefficient of L.DTDL is 0.919 and statistically significant at the 1% level, indicating that the instrument satisfies the relevance condition. In the second stage, the coefficient of DTDL is 0.534 and remains statistically significant at the 1% level. These results suggest that, after addressing endogeneity, the positive effect of digital trade on high-quality manufacturing development persists, further supporting the robustness and reliability of the study's findings.

Table 6. Endogeneity test

	(1)	**(2)**
VARIABLES	DTDL	HQMI
PGDP	-0.005	-0.019
	(-0.72)	(-1.20)
OPEN	-0.000	0.000**
	(-0.06)	(2.29)
RDI	-0.144	1.437*
	(-0.38)	(1.83)
URBAN	0.000	0.000
	(0.78)	(1.00)
GMSP	0.017***	0.053***
	(2.67)	(3.63)
L.DTDL	0.919***	
	(24.55)	
DTDL		0.534***
		(6.35)
Constant	-0.046	-0.039
	(-0.65)	(-0.27)
Observations	168	168
R-squared	0.972	0.889

5. Conclusions and Implications

5.1 Conclusions

Based on panel data from 21 prefecture-level cities in Guangdong Province for the period 2014–2023, this study employs a two-way fixed effects model and conducts both robustness and endogeneity tests, all of which support the reliability and validity of the findings. The main results are summarized as follows:

First, at the aggregate level, digital trade development in Guangdong Province has significantly promoted high-quality manufacturing development. The benchmark regression coefficient of DTDL is 0.739, and the result remains robust after alternative indicator construction and addressing endogeneity using lagged instrumental variables, indicating that digital trade constitutes a key driver of high-quality manufacturing development in Guangdong.

Second, notable heterogeneity exists in the effects of control variables. Local fiscal expenditure significantly contributes to enhancing manufacturing quality, whereas rapid urbanization appears to inhibit high-quality manufacturing development. The effects of regional economic level, openness (OPEN), and R&D investment (RDI) are constrained by industrial structure, implementation efficiency, and technology transformation rates, limiting their potential impact. In particular, low-quality urbanization and insufficient conversion of R&D outcomes are key factors constraining improvements in the quality of Guangdong's manufacturing sector.

Third, descriptive statistics highlight the objective regional development imbalances within Guangdong. The Pearl River Delta, led by Guangzhou, Shenzhen, Foshan, and Dongguan, dominates the province in both digital trade and manufacturing levels. In contrast, the eastern, western, and northern regions exhibit weaker digital infrastructure and a relatively underdeveloped industrial base, constraining the realization of digital dividends. Consequently, the regional digital divide within the province is pronounced.

5.2 Policy Implications

(1) Strengthen institutional support and the innovation ecosystem at the provincial level. To improve the commercialization efficiency of R&D investment, a regularized collaboration mechanism among universities, research institutes, and manufacturing enterprises should be established. In addition, a provincial-level fund dedicated to the commercialization of digital technology achievements should be created. Meanwhile, a unified provincial digital trade public service platform should be developed, and industry–education integration programs should be strengthened to cultivate interdisciplinary digital talent, thereby providing essential support for the digital transformation of the manufacturing sector.

(2) Enhance the role of the Pearl River Delta as a global digital trade hub and promote manufacturing upgrading. Priority should be given to developing producer-oriented digital services, including cross-border financial services and industrial Internet platforms. Pilot zones such as Guangzhou Nansha and Shenzhen Qianhai should be encouraged to explore institutional innovations related to cross-border data flows and digital trade governance. Manufacturing enterprises should be encouraged to shift toward integrated export models combining products and services through digital trade platforms. Furthermore, industrial Internet platforms should be expanded in major manufacturing centers such as Dongguan and Foshan to foster globally competitive advanced manufacturing clusters.

(3) Address regional disparities and cultivate distinctive forms of digital trade in eastern, western, and northern Guangdong. Investment in new digital infrastructure, including 5G base stations and gigabit broadband networks, should be accelerated to reduce the regional digital divide. These regions should leverage their comparative advantages in land and labor resources to undertake the transfer of digital production activities from the Pearl River Delta, while simultaneously improving digital service facilities within industrial parks. In addition, support should be provided for the development of cross-border e-commerce pilot zones in cities such as Shantou and Zhanjiang. The "industrial cluster + cross-border e-commerce" model should be promoted, and a digital trade cooperation mechanism between the Pearl River Delta and non-Pearl River Delta regions should be established to facilitate coordinated regional development.

Funding

No

Conflict of Interests

The authors declare that there is no conflict of interest regarding the publication of this paper.

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