Proceedings of ICFTBA 2025 Symposium: Financial Framework's Role in Economics and Management of Human-Centered Development
DOI: 10.54254/2754-1169/2025.GL28295

The Dilemma of Inclusiveness in the Digital Wave of Cross-Border E-Commerce and Barriers to Participation for Marginalised Groups

Yue Chen[1*], Jingyi Guo[2], Junyu Wei[3], Ce Zhang[3]

[1]*Lee Shau Kee School of Business and Administration, Hong Kong Metropolitan University, Hong Kong, China*
[2]*School of Mathematics and Physics, Xi'an Jiaotong-Liverpool University, Suzhou, China*
[3]*International Business School Suzhou, Xi'an Jiaotong-Liverpool University, Suzhou, China*
**Corresponding Author. Email: s1307429@live.hkmu.edu.hk*

Abstract. While the digital wave of cross-border e-commerce (CBEC) is reshaping global trade, its benefits have not been evenly distributed. Marginalized groups—including rural populations, women, and small or micro-enterprises—continue to face significant barriers to effective participation. This paper systematically reviews existing literature to identify the main obstacles, including persistent digital divides, limited access to finance and secure payment systems, regulatory and policy constraints, and unequal platform governance. These challenges restrict opportunities for disadvantaged actors and risk reinforcing existing socio-economic inequalities. The study further synthesizes breakthrough pathways highlighted in recent research. Key strategies involve expanding digital infrastructure and literacy to close access gaps, promoting inclusive financial and payment innovations tailored to smaller participants, developing coherent and supportive policy frameworks, and encouraging platforms to assume greater responsibility in ensuring fairness and visibility. By integrating these approaches, CBEC can move beyond growth-centered metrics toward inclusive development. The review underscores that achieving meaningful participation requires multi-stakeholder collaboration across governments, firms, platforms, and communities, offering both theoretical grounding and practical insights for future policy design and digital innovation.

Keywords: cross-border e-commerce, inclusive dilemma, marginalised groups, barriers to participation, breakthrough paths

1. Introduction

Cross-border e-commerce (CBEC) has experienced explosive growth driven by digital technology, but the dividends of its development have not reached all groups equally, as evidenced by the difficulties of rural communities in accessing global markets due to poor infrastructure, the dual constraints of insufficient Internet connectivity and low digital literacy faced by African microenterprises, and Internet usage among women in least developed countries (LDCs) is

DOI: 10.54254/2754-1169/2025.GL28295

significantly lower than among men [1, 2]. Together, these realities highlight the urgent need for inclusiveness in cross-border e-commerce development, and in the absence of targeted interventions, marginalized groups may be further excluded from global value chains, exacerbating development inequalities.

Existing academic studies provide important support for understanding the above issues. At the level of empirical research, Zhang confirms the role of Taobao villages in boosting rural incomes with double-difference methods, while Hjort finds that broadband expansion in Africa boosts corporate employment and exports [3, 4]. At the level of mechanism analysis, Hilbert points out the potential for leapfrogging women in developing countries for specific uses of digital technology [5]. Zhang et al. emphasize the importance of platform algorithmic transparency and financial services upgrading [6]. Empowerment research has also progressed, with Ye finding that mobile platforms embedded with local support systems can empower marginalized groups in rural areas. Huang et al. also point out the limitations of women's empowerment in live e-commerce [7, 8]. However, there are still limitations in existing research, such as insufficient exploration of the intersection of gender, geography, and socioeconomic status, providing room for further research.

Exploring the barriers and inclusive pathways for marginalized groups to participate in cross-border e-commerce can theoretically fill the intersectional research gap, and in practice can provide strategic references for policymakers and platforms.

This study systematically reviews the literature and analyses typical cases such as those in rural China and among small and medium-sized enterprises in Africa. It aims to identify core obstacles and construct an inclusive development framework, thereby providing support for the inclusive development of cross-border e-commerce.

2. Current development of cross-border e-commerce and inclusiveness needs

2.1. Growth and inclusive gaps in rural e-commerce

CBEC has expanded rapidly with digital platforms, yet rural and remote communities often remain marginalized. Evidence from China's Taobao Villages shows that e-commerce can raise rural incomes and create local jobs when infrastructure and market linkages are sufficient. For example, Li applied county-level panel data and found significant income gains in mountainous areas, suggesting that rural e-commerce can help overcome geographic disadvantages. Similarly, Tang employed a non-linear regression model and demonstrated that the benefits of e-commercialization peak at intermediate levels, after which marginal effects decline, reflecting uneven inclusiveness [1, 9]. A difference-in-differences study further confirms a causal increase in household income following the formation of Taobao Village [3]. Beyond China, broadband expansion in Africa also increased employment and enabled firms to participate in trade [4].

2.2. The digital divide in gender and infrastructure

Gendered inequalities persist across access, skills, and meaningful use. In least-developed countries, only about 30% of women use the Internet compared with roughly 43% of men, reflecting both affordability gaps and social norms that constrain women's technology adoption [2]. Peer-reviewed synthesis cautions that measures of the digital gender gap can vary by indicator and context, but the predominant pattern in developing regions is that women lag behind men in basic access, while sometimes leapfrogging in specific uses when barriers are addressed [5].

DOI: 10.54254/2754-1169/2025.GL28295

3. The main barriers to marginalised groups participating in cross-border e-commerce

3.1. Digital divide barrier

In terms of hardware, underdeveloped regions have limited access to digital technology due to insufficient infrastructure (such as power and broadband facilities) and high access costs. For example, Internet access in South Africa is concentrated among the affluent, with factors such as income and education levels affecting the ability of people in less developed areas, such as the rural areas in which they are located, to access digital devices, thus depriving them of the opportunity to participate in cross-border e-commerce from the outset [10]. In terms of software, small-scale farmers in Southern Africa, for example, can achieve higher profits by using digital tools for agricultural product promotion and sales. However, due to the lack of digital skills training, their digital literacy remains low. Additionally, gender gaps (such as women having less access to digital tools) and the marginalisation of elderly farmers further hinder the development of their digital capabilities, thereby limiting their participation in cross-border e-commerce [11].

3.2. Financial exclusion and payment barriers

In terms of financial exclusion, Small and Medium-sized Enterprises (SMEs) often struggle to secure financing due to limited collateral assets and a lack of operational transparency [12]. In addition, in the case of Spanish women entrepreneurs, their formal financing challenges are significantly exacerbated by a lack of willingness to apply under the 'expected rejection' mentality on the demand side, and high approval thresholds due to implicit discrimination by banks on the supply side [13]. These factors hinder the initiation and expansion of their businesses in cross-border e-commerce. In terms of payments, issues such as differences in data standards, poor system interoperability, and variations in timeliness between different payment systems all hurt cross-border transactions. In this process, emerging economies in particular face additional obstacles such as a reduction in correspondent banking relationships and complex currency conversion, thereby increasing the difficulty of cross-border transactions for marginalised groups [14].

3.3. Policies, regulations, and compliance barriers

Cross-border e-commerce policies show strong control and high relevance. Of the 13 policy keywords identified in Xiao's report, 8 are directly related to cross-border e-commerce and have significant impacts; some issues have been addressed, but there are still many priorities that need attention, such as customs administration, tax administration, internal and external synergies, etc. [15]. Meanwhile, there are significant differences between countries in terms of regulations, certification, and tax systems. For example, China's three certificates in one is the consolidation of the business license, organization code certificate, and tax registration certificate into a single license with a unified credit code, which is the basic compliance credential for SMEs to carry out cross-border e-commerce, and a necessary document for completing the platform's stationing and the Customs' filing [16]. Three certificates in one greatly shortens the time to do business and reduces the cost of compliance, but the existence of international differences such as the lack of awareness of the unified credit code in some countries increases the cost of cross-border e-commerce docking, for example, the U.S. Customs in the verification of the qualifications of the enterprise, but still require a separate proof of registration of the tax. Halal certification for Islamic countries requires verification of product ingredients and production processes to be in compliance

DOI: 10.54254/2754-1169/2025.GL28295

with Sharia law, and certification standards are not interchangeable across countries. For example, Saudi Arabia only mandates halal certification for slaughtered meat, while Afghanistan bans the import of pork and alcohol, with no exemptions for certification, so SMEs must accurately apply for the corresponding certification to be able to introduce goods into the local market [17]. However, marginalized groups have weaker access to information and adaptive capacity, and face challenges with complex policies and systems, increasing their compliance costs, difficulties, and participation thresholds.

3.4. Platform rules and ecological barriers

Cross-border e-commerce platforms have complex marketing tools, which are difficult for micro and small enterprises to utilize due to the shortage of resources, which may lead to a certain number of customer losses. In Chen's study, even though microenterprises A and B have unique products, they are limited by the lack of human resources and other undesirable factors, which prevent them from having good marketing on cross-border platforms, limiting the promotion of their products and preventing them from obtaining a larger customer flow [16]. In addition, counterfeiters on the platform take advantage of their own strengths to disrupt pricing rules and squeeze profit margins, Chen et al. said in their study that counterfeiters usually produce 80% of similar products, and micro and small enterprises do not have the capital to withstand the counterfeiting test themselves, so they can not certify their so-called genuine products to the platform, making their survival a challenge [16]. More importantly, cross-border platforms have complex payment and logistics rules, and microenterprises with limited cross-border business knowledge are unable to recognize and choose payment methods and logistics companies that are suitable for them, and cross-border platforms do not provide targeted guidance, further increasing their difficulty in adapting [16].

4. Exploring pathways to break down barriers to participation for marginalised groups

4.1. Bridging the digital divide and enhancing the inclusiveness of digitalization

To address the challenges faced by marginalized groups in participating in CBEC, the most effective solution is to bridge the digital divide, thereby enabling them to engage in online activities more conveniently and inclusively. China Guangfa Bank has adopted a new interface design for the elderly in its mobile application. The new design features larger characters, simplified buttons, and the availability of door-to-door services. This illustrates an effective approach that enhances accessibility for marginalized groups. Furthermore, improving the inclusiveness of digitalization means enabling individuals to have equal access to and effectively utilize digital technologies. Fixing the original difficulties about enhancing the inclusiveness of digitalization.

4.2. Complete inclusive finance and payment service system

To promote the digitalization of CBEC, an inclusive financial and payment service system can serve as a guarantee, ensuring that digital technologies are effectively accessible to marginalized groups. To advance inclusive finance, two approaches have been widely recognized in society. The first is overcoming financing barriers, to build confidence among marginalized groups to participate in the digitalization of CBEC. The second is the development of scenario-based product innovations. For example, the Xianning Municipal Government allocates special funds for digital transformation to small and medium-sized enterprises, which not only addresses the gaps in digital infrastructure but also provides targeted financial support to marginalized groups.

DOI: 10.54254/2754-1169/2025.GL28295

4.3. Optimizing the policy and regulatory environment

To focus on optimizing policy and regulatory frameworks, three core dimensions must be addressed: access inclusiveness, use safety, and development sustainability. To achieve inclusive access, the creation of digital identity whitelists is becoming a prevailing trend in governmental strategies. In line with big data globalization strategies, CBEC enterprises must enhance bilateral and regional cooperation on cross-border data flows, including data fusion and platform integration with governmental big data infrastructures. The One Belt, One Road policy highlights that such collaboration is instrumental in securing regional market leadership and advancing industrial optimization and efficient resource allocation. It remains imperative for governments and CBEC enterprises to deepen platform integration, streamline trade procedures, and strengthen regulatory mechanisms. Continuous process optimization and industrial upgrading within bonded and free trade zones enable CBEC enterprises to align strategic and operational innovations with the demands of rapid market expansion. This, in turn, enhances governmental capabilities for real-time dynamic oversight, which is essential for ensuring the healthy and orderly growth of the CBEC sector [6]. Individuals included in the whitelist belong to the marginalized group, and their inclusion contributes to improving the policy and regulatory environment. To ensure safe usage, governments must strengthen data protection and establish secure verification systems, focusing on websites, emails, and phone communications. Infrastructure development is the most effective approach to achieving sustainable growth. Supporting marginalized groups in accessing the digitalization of CBEC can foster inclusive economic development.

4.4. Strengthen platform responsibility

The primary responsibility of CBEC platforms is to ensure algorithmic transparency and fairness. Algorithmic transparency enhances the platform’s credibility within the social environment and contributes to upholding social justice. Furthermore, it ensures that marginalized groups receive appropriate assistance and support in cross-border e-commerce. To optimize operations, CBEC enterprises need to establish and improve B2B and B2C product visualization trading platforms. This involves employing big data visualization techniques to classify, consolidate, and comprehensively analyze business data. The implementation of big data-driven precision marketing strategies is crucial for achieving cost-effective and highly accurate promotion of products and services. Concurrently, reflecting the unique industrial characteristics of CBEC, enterprises must develop and upgrade cross-border financial service platforms. These platforms play a vital role in promoting industrial agglomeration by facilitating access to low-cost funding [6].

5. Research trends and future outlook

5.1. A shift toward empowerment studies

Recent work moves beyond access to examine capability building and empowerment. In rural China, mobile platforms can increase social networking, civic participation, and entrepreneurship among marginalized groups when embedded in local support structures [7]. At the same time, qualitative research on women’s live-stream commerce shows empowerment is often partial and constrained by platform algorithms, care responsibilities, and local gender norms [8]. Cross-nationally, the enabling role of infrastructure is clear: fast Internet deployment in sub-Saharan

DOI: 10.54254/2754-1169/2025.GL28295

Africa raised employment and supported tradable sectors, reinforcing that inclusion strategies should pair connectivity with skills and finance [4].

5.2. Challenges in current studies and future research needs

Despite encouraging findings, several gaps persist. First, micro-linked data that follow individuals and firms over time are still scarce, making it hard to trace who benefits, by how much, and through which mechanisms. Evidence from Indonesia demonstrates heterogeneous impacts of Internet availability across women's age and education groups—small gains in labor force participation for younger or less-educated women alongside declines in job formality—underscoring the need for gender-sensitive design and measurement [18]. Second, many evaluations draw on single-province samples or specific policy pilots; while informative, their external validity is limited. Staggered difference-in-differences studies at the province level show potential to raise income and narrow inequality, yet they also rely on strong assumptions and context-specific data that may not generalize [19]. Future work should combine administrative records with platform and logistics data, embed participatory methods with marginalized users, and report long-term cost-effectiveness to guide scaling.

6. Conclusion

This paper argues that CBEC creates major opportunities but can also reinforce exclusion without complementary investment. Marginalized groups face persistent barriers such as weak infrastructure, limited skills and finance, and platform rules that restrict visibility. Achieving inclusive progress requires integrated approaches that combine broadband expansion, digital training, financial access, and fairer governance.

The findings show that while rural e-commerce clusters and broadband rollout can raise household income and employment, benefits remain uneven. Women, micro-enterprises, and small entrepreneurs still struggle with structural disadvantages, from financing constraints to complex compliance requirements. These limitations suggest that CBEC is not automatically inclusive and must be intentionally designed to reduce inequality.

Governments should prioritize last-mile connectivity and community-based digital literacy programs, while platforms need to improve algorithmic fairness and provide accessible tools for small sellers. Financial institutions must also create flexible credit and payment options. Only through collective action can CBEC evolve into a fairer digital trade system that empowers disadvantaged actors and narrows global inequality.

Authors contribution

All the authors contributed equally, and their names were listed in alphabetical order.

References

[1] Li, G., & Qin, J. (2022). Income effect of rural E-commerce: Empirical evidence from Taobao Villages in China. Journal of Rural Studies, 96, 129–140.
[2] UNCTAD. (2023). E-commerce from a gender and development perspective. Geneva: United Nations Conference on Trade and Development.
[3] Zhang, N., Yang, W., & Ke, H. (2024). Does rural e-commerce drive up incomes for rural residents? Evidence from Taobao Villages in China. Economic Analysis and Policy, 82, 976–998.

DOI: 10.54254/2754-1169/2025.GL28295

[4] Hjort, J., & Poulsen, J. (2019). The arrival of fast internet and employment in Africa. American Economic Review, 109(3), 1032–1079.
[5] Hilbert, M. (2011). Digital gender divide or technologically empowered women in developing countries? Women's Studies International Forum, 34(6), 479–489.
[6] Zhang, X., Xu, D., & Xiao, L. (2021). Intelligent perception system of big data decision in CBC in data fusion. Journal of Sensors, 7021151, 1-11.
[7] Ye, X., & Yang, X. (2020). From digital divide to social inclusion: Mobile platform empowerment in rural China. Sustainability, 12(6), 2424.
[8] Huang, Y., Yang, Z., & Chang, K. (2024). Mobile immobility: An exploratory study of rural women's engagement with e-commerce livestreaming in China. The Journal of Chinese Sociology, 11, 5.
[9] Tang, K., Xiong, Q., & Zhang, F. (2022). Can the e-commercialization improve residents' income? Evidence from "Taobao Counties" in China. International Review of Economics & Finance, 78, 540–553.
[10] Aruleba, K., & Jere, N. (2022). Exploring digital transforming challenges in rural areas of South Africa through a systematic review of empirical studies. Scientific African, 16, e01190.
[11] Choruma, D. J., Dirwai, T. L., Mutenje, M. J., Mustafa, M., Chimonyo, V. G. P., Jacobs-Mata, I., & Mabhaudhi, T. (2024). Digitalisation in agriculture: A scoping review of technologies in practice, challenges, and opportunities for smallholder farmers in sub-saharan africa. Journal of agriculture and food research, 18, 101286.
[12] Wang, W., Sun, M., & Zhou, D. (2025). The impact of cross-border e-commerce comprehensive pilot zone on corporate financial constraints in China. Humanities and Social Sciences Communications, 12(1), 1-14.
[13] De Andrés, P., Gimeno, R., & de Cabo, R. M. (2021). The gender gap in bank credit access. Journal of Corporate Finance, 71, 101782.
[14] Zucker-Marques, M. (2025). Currency Internationalization, payment infrastructures and central banks: An institutional analysis of renminbi internationalization. Research in International Business and Finance, 73, 102571.
[15] Xiao, L., & Zhang, Y. (2022). An analysis on the policy evolution of cross-border ecommerce industry in China from the perspective of sustainability. Electronic Commerce Research, 22(3), 875-899.
[16] Chen, W. H., Lin, Y. C., Bag, A., & Chen, C. L. (2023). Influence factors of small and medium-sized enterprises and micro-enterprises in the cross-border e-commerce platforms. Journal of Theoretical and Applied Electronic Commerce Research, 18(1), 416-440.
[17] YUN, E. K., LEE, H. Y., & KIM, D. H. (2020). Is Halal Certification Necessary for Exporting to Islamic Countries? Focus on OIC Countries. Cultura. International Journal of Philosophy of Culture and Axiology, 17(1), 173-192.
[18] Kusumawardhani, N., Pramana, R., Saputri, N. S., & Suryadarma, D. (2023). Heterogeneous impact of internet availability on female labor market outcomes in an emerging economy: Evidence from Indonesia. World Development, 164, 106182.
[19] Lv, J., Liu, X., & Zhang, X. (2025). Rural e-commerce and income inequality: Evidence from Henan Province, China. Sustainability, 17(10), 4720.