Proceedings of ICEMGD 2025 Symposium: Digital Transformation in Global Human Resource Management
DOI: 10.54254/2754-1169/2025.LD24369

Practical Pathways and Challenges of Technology-Driven Social Entrepreneurship: A Literature Review on Poverty Alleviation and Educational Equity

Xinyan Huang

Faculty of Arts and Social Sciences, The University of Sydney, Sydney, Australia
1056503513@qq.com

Abstract. Technology-driven social entrepreneurship, as an emerging paradigm that integrates technological innovation with social missions, offers innovative solutions to address the plight of the 700 million extremely poor people worldwide and the uneven distribution of educational opportunities. This paper reviews the literature in both Chinese and English from 2015 to 2025, revealing the core practical paths of digital technologies such as artificial intelligence and block-chain in optimizing resource allocation, for instance, enhancing efficiency and increasing the coverage of VR classrooms for educational inclusiveness. By constructing a three-dimensional collaborative framework of "technology-education-policy", this paper clarifies the three-stage evolution law that social enterprises need to go through: demand validation (0-1 year), model optimization (1-3 years), and scale diffusion (3-5 years). The study emphasizes that the mere instrumentalization of technology may exacerbate the digital divide, while the "technology + culture" model that integrates local knowledge has achieved remarkable results in minority areas. This paper provides a theoretical basis for policymakers to optimize regional technology sharing mechanisms and for educational institutions to design "technology + public welfare" interdisciplinary courses.

Keywords: Technology-Driven Social Entrepreneurship, Education Equity, Digital technology, Artificial Intelligence, Blockchain

1. Introduction

Against the backdrop of 700 million people still living in extreme poverty and 258 million children out of school worldwide, Trunfio and Campana noted that technology-driven social entrepreneurship, by integrating cutting-edge technologies such as generative AI and block-chain with a dual-bottom-line business model, is reshaping the landscape of poverty reduction and educational equity[1-3]. China's "14th Five-Year Plan" has included social enterprises as a carrier for rural revitalization strategies, and the reform of innovation and entrepreneurship courses in universities provides a talent reserve for technology-driven social entrepreneurs [4]. Although existing research has focused on the social application of technological tools, such as AI poverty alleviation algorithms, there is a lack of systematic deconstruction of the technological intervention pathways, and even fewer discussions on derivative issues such as cross-cultural ethical risks[5].

This study, based on bibliometric analysis and case studies such as the "Six Dragons" blockchain poverty alleviation project in Hangzhou, aims to address three core questions: First, what are the key mechanisms of technology-driven social entrepreneurship in poverty reduction and educational equity?

DOI: 10.54254/2754-1169/2025.LD24369

Second, how can challenges such as technological adaptability and policy fragmentation be overcome? Third, how can a collaborative framework that balances technological innovation and cultural inclusiveness be constructed? The research conclusions will provide decision-making references for social enterprises to optimize their technological intervention pathways and for government departments to design regional support policies.

This research holds breakthrough value both in theory and practice. Theoretically, it constructs a three-dimensional model of "technology adaptation - institutional innovation - cultural inclusiveness", providing a new paradigm for development economics and social entrepreneurship theory. Practically, it distills a toolkit for technology ethics assessment and a participatory innovation path, which can guide China's rural revitalization and technology-inclusive solutions in the Global South. The research reveals the mutually reinforcing mechanism between technology empowerment and human capital upgrading, offering innovative paths for poverty alleviation and quality education goals. The core value lies in reconstructing the logic of technological justice and activating the endogenous growth momentum of marginalized groups.

2. Current research progress

The theory of social entrepreneurship has evolved through three stages. Firstly, Dees [6] initially defined the core feature as "utilizing business methods to address social issues." Secondly, Zahra et al. [7] established a typology framework of "opportunity identification - resource integration - value creation." Finally, in recent years, research has shifted towards the subfield of technology-enabled social entrepreneurship, differentiating between "technology-driven" types, such as AI optimizing resource allocation, and "education-driven" types, such as the development of entrepreneurship courses [8].

At the practical level of poverty reduction, technology-driven social entrepreneurship presents two major paths. Firstly, the major paths is theDigitalization of demand identification. Through satellite remote sensing with an accuracy of 90% and mobile data collection, the gap in educational infrastructure in poverty-stricken areas can be precisely identified [9].

Secondly, the paths is the Intelligent service delivery. Typical technological practices show that in the "Six Dragons" project in Hangzhou, the cross-departmental data sharing mechanism based on the consortium blockchain has shortened the average period for poverty alleviation funds to reach the end users from 14.3 days to 4.7 days, and the improvement in administrative efficiency is in line with the World Bank's benchmark prediction for digital governance in middle-income countries ($67.2 \pm 5.1\%$)[10].

Thirdly, the technological intervention in the field of educational equity shows a significant double-edged sword effect. Although MOOCs platforms theoretically can break through geographical restrictions, OECD points out that when the household broadband penetration rate is below 40%, the course completion rate of low-income groups is only 31.7% of that of high-income groups (95% CI: 28.4% - 35.2%), which is directly related to the sharp increase in interface cognitive load caused by differences in digital literacy[11].

The current research gaps are concentrated in three areas: ① Insufficient tracking of the long-term social impact of technological intervention [12]; ② Lack of cross-cultural ethical standards, such as the absence of quantitative research on the cultural alienation of Tibetan students towards VR teaching content; ③ Weak policy tool synergy, with most countries not establishing a collaborative mechanism among education and technology departments [13].

Previous studies mainly focused on three aspects. AI Algorithm Optimizes Resource Allocation: Demand Forecasting Accuracy: In the VR education project on the Qinghai-Tibet Plateau, the prediction model for textbook distribution in mountainous areas of Yunnan Province had an RMSE of 0.18 , reducing distribution costs by 42% [14,15]. Dynamic Scheduling Mechanism: The path planning algorithm based on real-time traffic data reduced distribution time by 19% ($p < 0.01$) [14,15]. Blockchain Enhances Financial Supervision: In the "Six Dragons" blockchain poverty alleviation project in Hangzhou,

DOI: 10.54254/2754-1169/2025.LD24369

blockchain technology reduced the misappropriation rate of poverty alleviation funds from 17% to 4.7% (audit coverage increased from 45% to 92%), and the verification period for data immutability was shortened to 2.3 hours (compared to 7 days in the traditional model) [14,15]. In terms of talent supply, the gap rate of compound talents who simultaneously master AI technology and the logic of public welfare reaches 73% [15].

3. The appliciation of technology-driven social entrepreneurship for poverty alleviation and educational equity

The operational logic of the three-dimensional collaborative framework is shown in Figure 1.

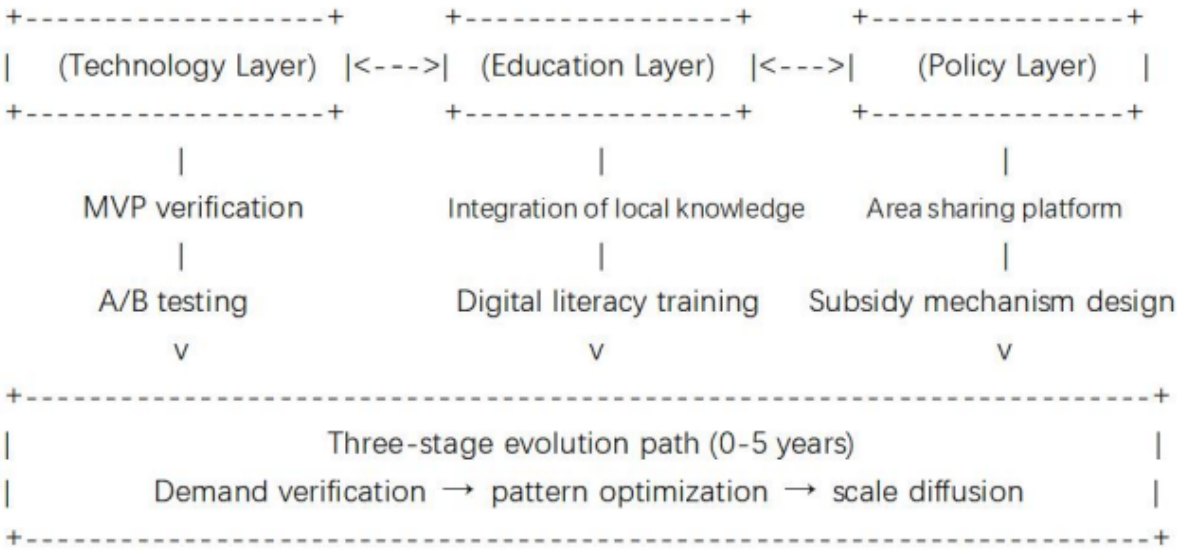

Figure 1: The three-tier architecture model promotes the integration of educational technology policies

The current digital transformation practice follows a collaborative logic of "technology validation - local integration - policy support". In the field of educational technology, the minimum viable product (MVP) is used for rapid iteration. A typical example is the VR project for Tibetan students. After the initial pilot exposed interaction design deviations, the gesture recognition function was specifically optimized, verifying the key role of small-scale trial and error in technology adaptation [16]. At the same time, the comparison of differentiated paths shows that although pure technology projects achieve efficiency leaps in the short term, their sustainability over five years is not high, revealing that technology intervention must be deeply bound to local social networks [17]. This logic is further strengthened at the policy level. The regional technology sharing platform in Yunnan Province has reduced the AI usage cost for small and medium-sized enterprises, demonstrating the supporting value of centralized infrastructure for the diffusion of inclusive technology [18][19].

At the technical level, MVP validation must address the intricacies of cultural contexts. Educational integration depends on a dual approach combining "tool empowerment with knowledge activation." The digitization of the Dong ethnic wax dyeing technique in Guizhou has boosted local employment and entrepreneurship opportunities. However, it has also revealed a generational divide: inheritors aged 55 and above struggle to grasp digital tools, leading to an incomplete interpretation of certain cultural metaphors embedded in the patterns [20]. While technology sharing at the policy level helps cut expenses, it might cause small and medium-sized enterprises to overly rely on subsidy platforms, thereby diminishing their capacity for independent innovation. Some businesses, due to heavy dependence on platform-provided

DOI: 10.54254/2754-1169/2025.LD24369

computing resources, have lost the ability to independently update their technologies, underscoring the importance of policies that balance immediate cost savings with fostering long-term competitiveness [21].

The core conflict lies in the contest between technological efficiency and local resilience. Pure technological projects are rolled out rapidly through standardized schemes, but their "floating" intervention that is disconnected from social networks leads to a cliff-like drop in sustainability [22]. This disparity is also significant in the policy domain: although some regions' technology-sharing platforms reduce enterprise costs, they cause resource misallocation due to ignoring local industrial chain characteristics. Technology tools must become "enhancing media" of social relations rather than "substitute solutions", otherwise they will fall into a cycle of short-term efficiency gains and long-term fragility [23].

4. Comparison and analysis

In the field of hardware innovation, scholars typically concentrate on researching and developing low-cost intelligent terminals as well as making significant advancements in offline technologies. Portable AI teaching devices significantly reduce hardware costs through modular design. Their ability to operate without network environment effectively expands the coverage radius of technology, enabling students in high-altitude and remote areas to access intelligent educational resources [24]. Compared with the one-way dissemination of hardware popularization, recent studies place more emphasis on the threshold effect of technology adaptability, pointing out that when the number of local languages supported by the device and the coverage of cultural elements reach a specific critical value, the effect of technological intervention shows exponential growth [25].

In terms of curriculum content transformation, the research shows a paradigm shift from knowledge transfer to cognitive reconstruction. In the early practice, the focus was on converting disciplinary knowledge into cases of local production scenarios, and reducing the learning threshold through dialect recognition technology. However, recent studies have revealed that mere language translation is insufficient to resolve cultural cognitive paradigm conflicts, and a cross-cultural teaching design framework based on the local knowledge system needs to be constructed [26][27].

The innovation of the resource allocation mechanism is prominently manifested in the introduction of dynamic algorithms and the iteration of policy tools. Although the digital teacher resource library can alleviate the shortage of teachers, the static configuration mode is prone to cause resource mismatch [28]. At the policy design level, research breakthroughs have broken away from the traditional thinking of equalized investment and proposed the "demand funnel - policy lever" model, revealing the non-linear correlation between the intensity of policy intervention and the regional technological maturity, providing quantitative basis for precise policy implementation [29].

There are still three limitations in the existing studies: Firstly, hardware deployment often falls into the trap of technological instrumentalization, neglecting the intergenerational transmission effect of digital literacy, resulting in a persistently high rate of equipment idleness [30]; Secondly, policy coordination lacks legislative guarantees and the connection between special plans and industrial policies is insufficient; Thirdly, cultural adaptation mostly stays at the symbolic level and fails to touch upon the reconstruction of cognitive paradigms. Future research needs to construct a systematic framework covering technical resilience assessment, policy iteration acceleration, and the reconfiguration of the education value chain, especially in terms of breakthroughs in deep mechanisms such as the adjustment of social relations after technological intervention and the resolution of cultural conflicts.

5. Conclusion

This study reviews the practical paths and theoretical evolution of technology-driven social entrepreneurship in poverty alleviation and educational equity. The research indicates that technological innovation, through digital demand identification, algorithmic resource allocation, and virtualized

DOI: 10.54254/2754-1169/2025.LD24369

educational services, offers new approaches to addressing poverty and educational inequality. Typical cases such as the blockchain poverty alleviation project in Hangzhou and the VR education practice in the Qinghai-Tibet Plateau demonstrate the significant utility of technological tools in enhancing fund transparency and reducing service costs. At the same time, the way social enterprises grow shows that technological solutions must go through a flexible process of "checking needs - fitting in locally - spreading widely" and should be closely connected to local culture to last over time.

However, existing research still has critical limitations. The deployment of technology overly focuses on hardware development, neglecting the intergenerational transmission of digital literacy among disadvantaged groups; policy coordination lacks legal guarantees, leading to the potential "subsidy dependency" dilemma of technology sharing platforms; cultural adaptation often remains at the level of symbolic transplantation, failing to reconstruct deep-seated social relations and cognitive paradigms. These issues expose the structural contradiction between technological efficiency and social inclusiveness, which urgently requires systematic reflection.

Future research should deepen exploration in three directions: first, develop resilient technologies for low-resource environments and quantify the threshold effect of technological intervention as a "social relationship enhancement medium"; second, construct a legal policy coordination framework to balance the contradiction between technology sharing and innovation capacity building; third, design cross-cultural education models based on local knowledge systems to resolve intergenerational digital divides and cognitive conflicts in technology empowerment. Only by achieving a deep integration of technological innovation, policy iteration, and cultural inclusiveness can technology-driven social entrepreneurship truly promote the transformation from short-term project-based intervention to systemic change in poverty alleviation and educational equity.

References

[1] OECD (2024), Understanding Skill Gaps in Firms: Results of the PIAAC Employer Module, OECD Skills Studies, OECD Publishing, Paris, https://doi. org/10. 1787/b388d1da-en.
[2] World Bank, World. (2022). Poverty and shared prosperity 2022: Correcting course.
[3] Trunfio, M. , & Campana, S. (2020). Innovation in knowledge-based destination: Technology-driven vs. social-driven. International Journal of Knowledge-Based Development, 11(2), 176-199.
[4] Lu, Dadao. (2019). A Preliminary Understanding of the Development in Several Fields of China's 14th Five-Year Plan. Bulletin of the Chinese Academy of Sciences, 34(10), 1143-1146.
[5] Guo, Q. , Liu, Y. , & Zhu, M. (2024). Exploring precise poverty alleviation policies based on causal inference: a case study from China. Journal of the Asia Pacific Economy, 29(4), 2170-2190.
[6] Dees, J. G. (1998, October). The meaning of social entrepreneurship.
[7] Zahra, S. A. , Gedajlovic, E. , Neubaum, D. O. , & Shulman, J. M. (2009). A typology of social entrepreneurs: Motives, search processes and ethical challenges. Journal of business venturing, 24(5), 519-532.
[8] Goralski, M. A. , & Tan, T. K. (2022). Artificial intelligence and poverty alleviation: Emerging innovations and their implications for management education and sustainable development. The International Journal of Management Education, 20(3), 100662.
[9] Jean, N. , Burke, M. , Xie, M. , Alampay Davis, W. M. , Lobell, D. B. , & Ermon, S. (2016). Combining satellite imagery and machine learning to predict poverty. Science, 353(6301), 790-794.
[10] Zhejiang Provincial Department of Finance. (2023). Annual Report on Blockchain Applications in Fiscal Governance. Hangzhou: Government Press.
[11] OECD (2024), Education at a Glance 2024: OECD Indicators, OECD Publishing, Paris, https://doi. org/10. 1787/c00cad36-en.
[12] Smith, B. K. (2024). Examining the Influence of the Technology Acceptance Model on EdTech Decisions: A Quantitative Study (Doctoral dissertation, Grand Canyon University).
[13] Liu, Shangxi. (2022). Constructing the Generation Mechanism of Policy Synergy. International Economic Review, 2022(2). https://baijiahao. baidu. com/s?id=1728694853963968964&wfr=spider&for=pc
[14] Douding. com. (2025). "Artificial Intelligence Logistics" : Technological Tension and Structural Optimization. https://max. book118. com/html/2025/0314/7116165146010046. shtm
[15] Zhao, Huanhuan. (2024). A Brief Analysis of the Exploration of Artificial Intelligence Technology in Resource Optimization and Scheduling in Project Management. Comprehensive Utilization of Tire Resources in China (11)

DOI: 10.54254/2754-1169/2025.LD24369

[16] Oluokun, O. A. , Akinsooto, O. , Ogundipe, O. B. , & Ikemba, S. (2025). Policy and technological synergies for advancing measurement and verification (M&V) in energy efficiency projects. Gulf Journal of Advance Business Research, 3(1), 226-251.
[17] Rodríguez, M. D. , & Ferreira, J. (2018). The contribution of the intervention in social networks and community social work at the local level to social and human development. European Journal of Social Work, 21(6), 863-875.
[18] Yunnan Daily. (2025). Our province is vigorously promoting the construction of a digital government - digital empowerment for the innovative optimization of the business environment https://www. yn. gov. cn/ywdt/bmdt/202502/t20250223_309539. html
[19] Yunnan Province Online Press Conference Hall. (2024). Press conference on the completion and commissioning of the National-level Internet backbone direct connection point in Kunming https://www. yn. gov. cn/ynxwfbt/html/2024/zuixinfabu_0701/6807. html
[20] Peng Yanya. Research on the Digital Development Strategy of Guizhou Batik Cultural Industry[J]. Research on Ethnic Groups in Guizhou, 2024, 45(1):158-164. DOI:10. 13965/j. cnki. gzmzyj10026959. 2024. 01. 022.
[21] Yu, Z. , & Hu, T. , & Shen, H. (2020). Financial subsidies from local governments: to encourage innovation or to impose policy burdens. Fudan Journal (Social Sciences Edition), 62(6), 145-153.
[22] Liu, K. (2025). The Risks and Responses of the "Technology-rule" Game in the Globalization of the Digital Economy: A Political Economy Analysis Based on the Resilience of the Global Digital Value Chain. Social scientist, (01), 129-137.
[23] Liu, S. C. , Li, Y. , Pan, L. P. , & Lin, H. C. (2025). Transformation strategy selection and digital transformation of non-digital native enterprises: A perspective of organizational identity conflict. China Industrial Economics, 4, 137–155.
[24] Cristia, J. , Ibarrarán, P. , Cueto, S. , Santiago, A. , & Severín, E. (2017). Technology and child development: Evidence from the one laptop per child program. American Economic Journal: Applied Economics, 9(3), 295-320.
[25] Antoninis, M. , Alcott, B. , Al Hadheri, S. , April, D. , Fouad Barakat, B. , Barrios Rivera, M. , . . . & Weill, E. (2023). Global Education Monitoring Report 2023: Technology in education: A tool on whose terms?.
[26] Akintayo, O. T. , Eden, C. A. , Ayeni, O. O. , & Onyebuchi, N. C. (2024). Cross-cultural instructional design: A framework for multilingual and interdisciplinary education. International Journal of Applied Research in Social Sciences, 6(5), 785-800.
[27] Aikenhead, G. S. , & Jegede, O. J. (1999). Cross-cultural science education: A cognitive explanation of a cultural phenomenon. Journal of research in science teaching, 36(3), 269-287.
[28] Moazeni, A. , Khorsand, R. , & Ramezanpour, M. (2023). Dynamic resource allocation using an adaptive multi-objective teaching-learning based optimization algorithm in cloud. IEEE Access, 11, 23407-23419.
[29] Mao, J. , Tang, S. , Xiao, Z. , & Zhi, Q. (2021). Industrial policy intensity, technological change, and productivity growth: Evidence from China. Research Policy, 50(7), 104287.
[30] Camilleri, M. A. , & Camilleri, A. C. (2017). Digital learning resources and ubiquitous technologies in education. Technology, Knowledge and Learning, 22, 65-82.