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Optimizing Technology-Based Social Entrepreneurship as a Driver of Inclusive Innovation in Urban Development Strategy

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ABSTRACT

This study aims to examine the strategic role of technology-based social entrepreneurship in fostering inclusive innovation as part of an urban development strategy. Using a qualitative approach through a literature review method, this research analyzes 32 scholarly articles published between 2007 and 2025, selected from a total of 40 initial sources obtained through Google Scholar and credible websites. The analysis reveals that digital social entrepreneurship can serve as a catalyst for social transformation by creating solutions based on local needs, strengthening the socio-economic resilience of urban communities, and facilitating cross-sector collaboration. The study also identifies several challenges, including low technological literacy, limited digital infrastructure, and weak policy support. Referring to the theories of inclusive innovation, diffusion of innovation, and collaborative governance, this study affirms that optimizing technology-based social entrepreneurship requires a systemic approach involving the state, communities, and market actors to create a just and sustainable urban innovation ecosystem.

ABSTRAK

Penelitian ini bertujuan untuk mengkaji peran strategis kewirausahaan sosial berbasis teknologi dalam mendorong inovasi inklusif sebagai bagian dari strategi pengembangan wilayah perkotaan. Menggunakan pendekatan kualitatif melalui metode tinjauan pustaka, penelitian ini menganalisis 32 artikel ilmiah yang terbit antara tahun 2007 hingga 2025 dan dipilih secara ketat dari total 40 sumber awal yang diperoleh melalui Google Scholar dan situs web kredibel. Hasil analisis menunjukkan bahwa kewirausahaan sosial digital mampu menjadi katalis transformasi sosial melalui penciptaan solusi berbasis kebutuhan lokal, memperkuat ketahanan sosial-ekonomi komunitas urban, serta memfasilitasi kolaborasi lintas sektor. Penelitian ini juga mengidentifikasi sejumlah tantangan seperti rendahnya literasi teknologi, terbatasnya infrastruktur digital, dan lemahnya dukungan kebijakan. Dengan merujuk pada teori inclusive innovation, diffusion of innovation, dan collaborative governance, studi ini menegaskan bahwa optimalisasi kewirausahaan sosial berbasis teknologi membutuhkan pendekatan sistemik yang melibatkan negara, komunitas, dan pelaku pasar untuk menciptakan ekosistem inovasi kota yang berkeadilan dan berkelanjutan.

1. INTRODUCTION

The transformation of socio-economic structures in urban areas has driven the need for new approaches to regional development that are more inclusive, adaptive, and sustainable. In the context of rapid urbanization, challenges such as social inequality, unequal access to public services, and growing pressure on basic infrastructure demand solutions that are both technical and socially grounded. One strategic approach that has emerged in response to these challenges is the strengthening of social entrepreneurship as a driving force of innovation. Social entrepreneurship is oriented toward creating economic value while prioritizing social benefit as its core mission, making it a vital actor in urban development that favors vulnerable and marginalized groups (Hasanah et al., 2022).

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Within the framework of sustainable development and social justice theories, the emergence of technology-based social entrepreneurship has become an increasingly significant phenomenon (Khasanah et al., 2023; Raman et al., 2025). Digital technology has opened new opportunities to expand social impact through online platforms, mobile applications, geospatial information systems, and artificial intelligence that are accessible to broad communities. Initiatives such as community-based e-commerce systems, citizen reporting apps, and inclusive digital services in education, health, and economic empowerment demonstrate how technological innovation can strengthen the capacity of social entrepreneurs in addressing structural urban problems. Here, technology is not merely a tool, but an enabler of social transformation and a driver of collaborative innovation.

Inclusive innovation, as a key concept in urban development, emphasizes the importance of active participation from all layers of society in the innovation process, including groups that have long been socially and economically marginalized. In practice, technology-based social entrepreneurship can open up spaces for such participation through product or service designs that are responsive to local needs. For instance, in cities like Bandung, various civic-tech initiatives have been developed by social startup communities in collaboration with local governments to tackle issues such as transportation, waste management, and access to healthcare services (Lestari, 2016). This phenomenon shows that innovation is no longer the exclusive domain of large corporations, but can be nurtured from the grassroots through value-driven, tech-enabled social enterprises.

From the perspective of regional development strategy, optimizing the role of social entrepreneurship also contributes to strengthening social cohesion, building local capacity, and regenerating marginalized areas (Daskalopoulou et al., 2023; Lang & Fink, 2019). This strategy differs from conventional top-down development approaches that tend to emphasize only physical and spatial aspects. This new approach positions social entrepreneurs as catalysts of change by synergizing local community potential, adaptive technologies, and collaborative networks to create contextual solutions for urban problems. In this regard, regional development is no longer uniform but instead grounded in the social strengths inherent within communities, while also promoting the decentralization of innovation processes to the community level.

However, the optimization of technology-based social entrepreneurship cannot be separated from structural challenges such as limited digital infrastructure, low technological literacy among grassroots communities, and weak public policy support for a social innovation ecosystem. These issues demand a holistic approach that includes policy support, capacity building, and the formation of partnerships among government, private sector, academia, and community stakeholders. Without an adequate supporting ecosystem, social entrepreneurship is at risk of stagnating at a small scale and failing to achieve the replication or expansion necessary to create systemic impact in urban areas (Fitramadhana, 2022; Roundy, 2017).

Furthermore, the development of technology-based social entrepreneurship is also inseparable from the dynamics of urban digitalization, which bring changes in social interaction patterns, economic structures, and urban cultural behavior (Nagy & Veresné Somosi, 2022; Pathak & Kaur, 2025). The smart city concept, which has been widely adopted in major cities in Indonesia, often falls into a purely technological approach that overlooks the inclusive social dimension. In this context, social entrepreneurship offers an alternative approach that bridges digital efficiency logic with social justice, aligning the need for data-driven transformation with the diverse local realities. Therefore, integrating social entrepreneurship with smart city technology infrastructure becomes a strategic middle path to realizing inclusive and equitable urban innovation.

The contribution of technology-based social entrepreneurship to urban development strategies can be further analyzed through the lens of systemic innovation theory and co-creation. Systemic innovation emphasizes the importance of interaction among actors within the innovation ecosystem, while co-creation positions users as active partners in the innovation process. In this context, social entrepreneurs develop products or services through collaborative processes that integrate citizens' voices, technological data, and policy interventions to create solutions grounded in real needs. Consequently, urban development strategies are not merely reactive but become dynamic processes sustained by citizen participation and social sustainability.

Based on this discussion, this study aims to explore how the optimization of technology-based social entrepreneurship can contribute as a driver of inclusive innovation in urban development strategies. Using a literature review approach, this study will identify theoretical frameworks, best practices, and the key challenges in integrating social entrepreneurship, digital technology, and inclusive urban planning.

2. THEORETICAL FRAMEWORK AND HYPOTHESES

Social Entrepreneurship

Social entrepreneurship is a form of entrepreneurship that integrates social objectives into a sustainable business model, with a primary focus on creating positive social impact for communities, especially vulnerable and marginalized groups (Bansal et al., 2019). Unlike conventional entrepreneurs who are primarily driven by financial profit, social entrepreneurs prioritize solving social problems through innovative, participatory, and sustainable approaches. In the context of urban development, social entrepreneurs play a strategic role as change agents capable of bridging the gap between citizens' social needs and the limited responses from the state or market through community-based approaches and empathetic values.

Digital Technology

Digital technology encompasses all devices, applications, and electronic information systems that enable the rapid and efficient processing, distribution, and exchange of data (Li et al., 2024). In the realm of social entrepreneurship, digital technology functions not merely as a tool but as a catalyst that expands the reach of social impact, facilitates cross-regional interaction, and creates service models that are more adaptive and responsive to the needs of urban citizens. The adoption of digital technologies such as online platforms, social media, big data, and artificial intelligence enables social enterprises to design data-driven solutions, enhance operational efficiency, and strengthen participatory relationships with target communities in an inclusive manner.

Inclusive Innovation

Inclusive innovation refers to the process of creating solutions that actively involve groups who are typically excluded from conventional innovation processes, such as low-income populations, persons with disabilities, and marginalized urban communities (Foster & Heeks, 2013; Mortazavi et al., 2021). The objective of this innovation is not only efficiency or profitability but the equitable and socially meaningful distribution of benefits that are accessible to all segments of society. In the context of technology-driven social entrepreneurship, inclusive innovation emerges when technological solutions are developed based on real community needs, involve residents as active partners, and ensure that their benefits reach groups that have historically been underserved by urban systems.

Urba Area Development

Urban area development is a strategic process involving spatial planning, infrastructure enhancement, public service provision, and the strengthening of socio-economic capacity aimed at holistically improving the quality of life in urban environments (Khalil, 2012). Ideally, this process is not solely focused on physical or economic growth, but also emphasizes social justice, local competitiveness, and resilience to crises. By integrating technology-based social entrepreneurship and inclusive innovation into urban development strategies, governments and stakeholders can foster more sustainable, democratic, and inclusive models of urbanization that prioritize those who are most vulnerable to marginalization amid the tides of urban modernization.

3. RESEARCH METHOD

This study adopts a qualitative approach through a literature review method aimed at deeply exploring various concepts, theories, empirical findings, and best practices related to the theme of optimizing technology-based social entrepreneurship as a driver of inclusive innovation in urban development strategies. This approach is chosen because it is suitable for understanding complex phenomena through the analysis of a wide range of existing literature sources, without direct field data collection. The analysis is conducted descriptively, by identifying conceptual patterns, inter-variable linkages, and trends emerging from previously published studies. The data sources in this research were obtained from scholarly articles published between 2007 and 2025, accessed via the academic search engine Google Scholar and several credible websites such as official government portals, reputable international journals, and research reports from relevant independent institutions. The data collection process was carried out systematically using key search terms such as “social entrepreneurship,” “urban development,” “inclusive innovation,” and “technology-based community enterprise.” Initially, 40 relevant articles were identified, but after a rigorous screening process based on criteria of substantive relevance, novelty, originality, and theoretical contribution, the final analysis focused on 25 core articles. The selection process was conducted in three stages: initial identification based on titles

and abstracts, comprehensive content evaluation, and synthesis to avoid duplication of ideas and strengthen the diversity of perspectives. The selected articles include conceptual studies, empirical case studies from various countries (particularly in Asia and the Global South), and public policy evaluations directly related to technology-based social entrepreneurship and inclusive urban development. The results of this process were then analyzed narratively to extract core themes and generate conceptual findings that serve as the foundation for argumentation and the construction of a synthesis framework.

4. DATA ANALYSIS AND DISCUSSION

The role of social entrepreneurship in urban development has become increasingly strategic amid rising social disparities, uneven urbanization, and the need for more responsive development models toward vulnerable groups. According to the Social Innovation theory by (Mulgan et al., 2007), social entrepreneurship does not merely offer alternative solutions but serves as a primary driver in achieving systemic transformation through innovations rooted in social justice and sustainability. In this context, the social entrepreneurship approach can transcend the boundaries between public, private, and community sectors, fostering a more participatory and democratic form of urban governance through collaborative schemes that bring together various actors within the urban ecosystem. Its significance is amplified when driven by digital technology, as it enables the real-time and efficient expansion of social services and creates participatory channels that encourage the active involvement of urban residents, especially marginalized groups often excluded from mainstream development. The integration of technology into social entrepreneurship also contributes to the creation of innovative platforms that are adaptive to urban dynamics, such as inclusive marketplaces, civic tech tools, and data-driven solutions addressing complex issues like economic inequality, limited access to education and healthcare, and environmental crises that require cross-sectoral responses. Thus, social entrepreneurship emerges as a transformative response to market and state failures, offering tools for building just, resilient, and inclusive cities based on sustainable social innovation.

Research in the slum areas of Bogotá demonstrates that digital technology, when combined with community-based social entrepreneurship, can create participatory information systems that not only map essential needs like clean water and sanitation more accurately but also shift residents' roles from passive recipients to active participants in urban decision-making and problem-solving (Wikipedia, 2025b, 2025a). This underscores that digitalization is not merely a technical tool but a social instrument capable of strengthening the resilience of impoverished urban communities in facing structural marginalization. In Indonesia, this statement is reinforced by the example of the Amartha platform, which not only acts as a financial intermediary but also facilitates the economic empowerment of women in underdeveloped regions. This illustrates how technology can serve as a bridge between the center and the periphery, between capital owners and vulnerable groups, by enabling a more equitable and distributed financial system (Puaux, 2020; Saputri, 2024). Through the integration of technology and social missions, a new model of urban development emerges—one that is no longer elitist or sectoral but inclusive and rooted in local solidarity, where innovation is measured not only by technical efficiency but also by its ability to restore spatial, economic, and social justice collectively within an increasingly complex and differentiated urban landscape.

The Inclusive Innovation theory by (George et al., 2012) emphasizes that truly transformative innovation does not stop at the distribution of benefits to the poor and marginalized but must actively involve them as co-creators in every stage of innovation—from problem formulation and solution design to implementation and impact evaluation. In this regard, technology-based social entrepreneurship functions not only as an agent of change but also as a facilitator of innovation democratization, enabling citizens to become active subjects in urban development. The Atma Connect program through the AtmaGo app in Surabaya exemplifies this principle in action, where citizens directly produce and share information on local issues such as floods, waste, and social activities—not only as emergency responses but also as collective forms of risk management and grassroots social network strengthening (Atma Connect, 2025; Atma Connectt, 2025). This approach shows that technology can transform into an empowering digital public space, encouraging citizens to act as agents of knowledge and solidarity within urban ecosystems made fragile by socio-ecological crises. With a participatory design and functions that adapt to local needs, models like AtmaGo strengthen community resilience to shocks, nurture a sense of ownership, foster social trust, and build inter-citizen connections—proving that inclusion in innovation is not merely a slogan but a development strategy rooted in justice, sustainability, and horizontal collaboration.

The Collaborative Governance approach developed by (Ansell & Gash, 2008) highlights the importance of deliberative, participatory, and consensus-based processes in public policy decision-making, where successful collaboration depends on mutual trust, shared commitment, and inclusive coordination mechanisms. In the context of urban governance, this principle is especially relevant in urban innovation ecosystems such as that in Yogyakarta, where partnerships between Gadjah Mada University, the Special Region Government of Yogyakarta, and local startup communities have led to the creation of the Jogja Smart Province platform. This stands as tangible evidence of cross-sector collaboration that touches on digital service provision, accommodates citizen aspirations, and engages social entrepreneurs in the design and development of technology-based solutions (Parwanto, 2023; Rachmawati et al., 2018). This model reflects that urban innovation need not be confined to technocratic or commercial approaches but can instead become a grounded collaborative arena where technology serves to strengthen social relations, expand citizen participation, and ensure that urban development processes are aligned with local contexts and real community needs. Such approaches demonstrate that the success of smart city governance is not measured by the number of sensors or data speed, but by how much participation and ownership communities have in shaping their city's transformation in a fair, transparent, and sustainable manner.

Various studies affirm that while technology-based social entrepreneurship holds vast potential in breaking down social inequality and expanding access to public services in urban areas, structural barriers such as low digital literacy, limited network infrastructure, and weak policy frameworks are determining factors behind the failure of many initiatives to scale sustainably, as highlighted in a study by (Jelita, 2021) in Jakarta. Promising digital social entrepreneurship initiatives often stall in their early stages due to the lack of advanced technology training for communities, the absence of fiscal incentives for social entrepreneurs, and the lack of support from local bureaucracies that should act as connectors between communities and public resources. The disengagement of state actors from this social innovation ecosystem reveals a gap between smart city policy aspirations and grassroots social realities. Within this framework, technology cannot stand alone as a solution—it must be reinforced by affirmative policies that place small and medium social entrepreneurs as central actors of transformation, supported by progressive institutional interventions, equitable funding, and regulations that facilitate cross-sectoral collaboration. Therefore, to promote the sustainability of digital social entrepreneurship in urban areas, an ecosystemic approach is needed—one that integrates technical, social, and political dimensions, with the state acting as regulator, facilitator, and catalyst for innovations that empower vulnerable groups and local communities.

Diffusion of Innovation theory offers a robust analytical framework to understand the dynamics of digital innovation dissemination in the context of urban social entrepreneurship, emphasizing that technology adoption is influenced by technical characteristics, perceived relative advantage, compatibility with local norms, complexity, trialability, and observability by early users (Rogers et al., 2019). In the case of the Digital Innovation Hub program in Makassar, a collaboration between the city government and private sector created a facilitative space enabling young social entrepreneurs, particularly in the Tallo and Panakkukang areas, to both understand and internalize the tangible benefits of digital technology for their business operations (Pagarra et al., 2025). Through intensive training, micro-scale social entrepreneurs began adopting electronic payment systems, boosting product visibility through social media, and integrating simple financial management software suited to their business contexts. This indicates that successful diffusion is driven by the availability of technology, the intensity of mentoring, the relevance of training content, and the presence of early adopters serving as local role models. It proves that innovation diffusion strategies in the social entrepreneurship sector must consider community social structures and develop phased, adaptive, and context-sensitive adoption mechanisms so that digital innovations become embedded in daily business practices—not merely temporary trends that fade once intervention programs conclude.

The optimization of social entrepreneurship within modern urban contexts cannot be separated from the principles of Urban Resilience, which emphasize a city's ability to adapt, respond, and recover from various disruptions—whether physical, such as natural disasters, or socio-economic, such as health crises or structural poverty (Ribeiro & Pena Jardim Gonçalves, 2019). Within this framework, technology-based social entrepreneurs play a central role as resilience agents due to their high adaptive and innovative capacities and their ability to build cross-sectoral networks that strengthen collective urban responses. During the COVID-19 pandemic, platforms like KitaBisa.com demonstrated how technology could be quickly and effectively mobilized to bridge logistical needs, disseminate critical information, and foster social solidarity, particularly in densely populated and vulnerable areas (Catriana & Djumena, 2020; Kitabisa, 2020). The collaboration

between KitaBisa, volunteer networks, and social startups illustrated that social sustainability during crises relies not only on state capacity but also on digitally organized civic initiatives. Such roles reinforce the narrative that resilience is not solely built through physical infrastructure or disaster planning but requires a living, responsive social ecosystem rooted in trust and strengthened by technology. Hence, digital social entrepreneurship becomes a vital node in resilient city strategies—thriving on solidarity, participatory innovation, and adaptability to evolving disruptions.

Based on a synthesis of theories such as Social Innovation, Inclusive Innovation, Collaborative Governance, Diffusion of Innovation, and Urban Resilience, alongside real-world case studies from Bogotá, Surabaya, Makassar, and Yogyakarta, it can be stated that technology-based social entrepreneurship is not merely an alternative driver of development but a strategic component in shaping socially inclusive, innovative, and resilient cities. The role of adaptive, participatory, and locally grounded social entrepreneurs enables the creation of solutions that are relevant to the needs of urban communities, especially vulnerable groups often excluded from conventional development schemes. However, to ensure the sustainability and systemic impact of this role, a supportive ecosystem beyond market logic is essential—comprising progressive cross-sector public policies, investment in community-level digital literacy and infrastructure, and multistakeholder collaboration mechanisms that position citizens as equal partners in urban innovation. Thus, urban development approaches must be holistic, evidence-based, and context-specific so that the potential of social entrepreneurship does not remain a short-term crisis response but becomes a foundation for long-term structural transformation rooted in social justice, democracy, and the capacity to inclusively and sustainably address the growing complexity of urban challenges.

5. CONCLUSION, IMPLICATION, SUGGESTION, AND LIMITATIONS

This study concludes that technology-based social entrepreneurship plays a crucial role in promoting inclusive innovation for more adaptive and equitable urban development strategies. Social entrepreneurship is not merely an alternative solution to market failures and the limitations of public policy; it also serves as a driving force for social transformation by integrating community values with the potential of digital technology. Through participatory approaches, context-specific use of technology, and cross-sector collaboration, social entrepreneurs are capable of producing innovations rooted in local community needs, which in turn strengthen social resilience, empower local economies, and enhance inclusive public service delivery. However, this significant potential continues to face serious challenges, including limited digital infrastructure, low levels of technological literacy, and the suboptimal involvement of government actors in building a sustainable ecosystem for social entrepreneurship in urban areas.

Theoretically, this study expands the scope of innovation approaches in urban development by combining the perspectives of inclusive innovation, collaborative governance, and diffusion of innovation within the context of digital social entrepreneurship. In practical terms, local governments and urban stakeholders need to design development strategies that go beyond physical infrastructure by supporting the formation of a strong digital social entrepreneurship ecosystem. This includes facilitating community-based technology training, establishing locally grounded social incubators, and formulating regulatory frameworks that are favorable to digital social business initiatives. Furthermore, the use of digital technology in social entrepreneurship opens up opportunities to accelerate the transformation of public services, making them more transparent, participatory, and responsive to citizen needs.

To optimize the role of technology-based social entrepreneurship in urban development, several key recommendations can be proposed. First, affirmative policy interventions are needed, including fiscal incentives, easier access to financing, and strengthening the digital capacities of social entrepreneurs. Second, city governments should establish collaborative spaces involving multiple actors—such as social innovation forums or public-community partnerships—to accelerate the diffusion of innovative local solutions. Third, educational institutions and research organizations must take a more active role in developing co-creation models that social entrepreneurs can use to design solutions grounded in citizen data and lived experiences. Lastly, strengthening digital literacy in marginalized urban communities must be a priority to ensure they are not merely beneficiaries but active creators of innovation.

This study has several limitations that must be acknowledged. First, as it employs a literature review approach, all analyses are based on secondary sources and do not provide direct empirical evidence from field-based contexts. Second, although the study relies on literature published between 2007 and 2025, there remains a potential bias in the selection of sources, which are limited to English and Indonesian publications

available online. Third, most of the case studies analyzed focus on specific urban areas in Indonesia and other Global South countries, which may limit the generalizability of findings across all urban contexts. Therefore, further field-based research is essential to enrich contextual perspectives and test the conceptual validity at a more specific local scale.

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