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Research Article

Integrating Intellectual Capital and Entrepreneurship Ecosystems to Enhance Community-Based MSMEs Performance: A Soft Systems Methodology Approach

Raden Isma Anggraini[1*], Mohammad Syamsul Maarif[2], Zenal Asikin[3], Anggraini Sukmawati[4]
[1-3]*School of Business, IPB University, Jl. Padjajaran, IPB Gunung Gede Campus, Bogor, Indonesia*
[4]*Department of Management, Faculty of Economics and Management, IPB University, Jl. Agatis, IPB Darmaga Campus, Bogor, Indonesia*
*Corresponding Author : ismaanggraini@apps.ipb.ac.id

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ABSTRACT

Micro, small, and medium enterprises (MSMEs) are essential contributors to economic resilience and inclusive growth in emerging markets. However, community-based MSMEs often face systemic challenges such as limited access to finance, fragmented markets, and regulatory complexity. While intellectual capital and entrepreneurship ecosystem have been widely recognized as innovation drivers, their structured integration remains underdeveloped in practice.This study proposes a systemic business performance model that integrates intellectual capital and entrepreneurship ecosystem components through Soft Systems Methodology (SSM). Using stakeholder mapping, in-depth interviews, and system modeling, the study uncovers interrelated drivers, barriers, and intervention points in four community-based MSME clusters in Indonesia. Triangulation through expert validation, document analysis, and member checking enhances the study's rigor and credibility. Findings highlight digital adoption, financial literacy, and cross-sectoral partnerships as critical to MSMEs sustainability. The resulting model underscores participatory governance, inclusive finance, and adaptive policy as enablers of resilience. By contextualizing open innovation within MSMEs ecosystems, this research contributes a holistic framework that is applicable across similar emerging economies. Policy recommendations include incentives for digital transformation, support for ecosystem collaborations, and interventions tailored to local entrepreneurial dynamics.

Keywords: Community-Based MSMES, Entrepreneurship Ecosystem, Intellectual Capital, Systemic Innovation, Soft System Methodology

INTRODUCTION

Micro, small, and medium enterprises (MSMEs) play a crucial role in local economies by generating income, preserving cultural heritage, and promoting economic independence. They contribute significantly to employment creation and GDP growth (Weldeslassie et al., 2019). Community-based MSMEs are established and managed by certain communities with the aim of creating jobs, empowering the economy, strengthening the local economy and preserving the environment and culture (Gandasoli, 2023). Their contributions to Gross Domestic Product (GDP) and social well-being have been widely recognized in both academic and policy discussions (Gandasoli, 2023; Weldeslassie et al., 2019).

To sustain and enhance their economic impact, MSMEs rely on intellectual capital (IC)—comprising human, structural, and relational capital—as well as entrepreneurship ecosystem (EE), which provides external support through financial institutions, policy frameworks, and market linkages (Subramaniam & Youndt, 2005). The integration between IC and EE fosters innovation, business sustainability, and competitiveness, making them critical components in MSMEs development strategies.

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While the importance of intellectual capital (IC) and entrepreneurship ecosystem (EE) has been widely recognized in the literature, its implementation in the context of community-based MSMEs still faces significant challenges. One of the main obstacles lies in the human capital aspect, where low managerial skills, limited digital literacy, and lack of entrepreneurial education lead to limitations in business development and scalability (Hidayat et al., 2024). In addition, weaknesses in structural capital such as the absence of a knowledge management system, lack of structured business processes, and slow adoption of digital technology also hamper operational efficiency. On the other hand, limitations in relational capital, characterized by weak networking capabilities and limited access to broader markets, constrain business expansion and the creation of collaborative opportunities (Anggara & Djamaluddin, 2024; Banerjee, 2023). In addition, suboptimal entrepreneurial ecosystems-such as fragmented policy support, inadequate financing mechanisms, and limited technological infrastructure-are also systemic barriers that hinder the sustainable growth of community-based MSMEs (Bruton et al., 2013; Stam, 2015).

Existing development models often adopt a top-down approach, failing to consider the unique, community-driven dynamics of MSMEs (Acs et al., 2017; Isenberg, 2011). Many interventions, such as digital transformation programs, financial literacy training, and policy reforms, lack a structured, holistic framework to integrate IC and EE for long-term MSMEs sustainability. This gap necessitates a system-oriented approach to MSMEs development.

To address these challenges, this study develops a community-based MSMEs business performance model by integrating IC and EE through Soft System Methodology (SSM). SSM was selected over other qualitative approaches due to its effectiveness in analyzing complex, unstructured problems involving multiple stakeholders and dynamic interactions.

Unlike Grounded Theory, which focuses on theory generation, or Case Study Research, which examines specific instances, SSM allows for iterative problem-solving and participatory modeling—a crucial approach for understanding and enhancing MSMEs ecosystems (P. Checkland, 1981; P. B. Checkland & Poulter, 2006). SSM allows researchers to model MSME performance holistically, identifying underlying constraints, formulating strategic actions, and continuously refining interventions based on stakeholder feedback. This participatory approach ensures that solutions are not only theoretically sound but also practically viable and culturally relevant (Wilson, 2001).

Previous studies have demonstrated the effectiveness of SSM in business process optimization, knowledge management, and policy formulation. For instance, Hardjosoekarto (2012) utilized SSM to design adaptive business strategies for MSMEs, while Barusman et al. (2020) applied SSM to model community-based business networks. These studies indicate that SSM facilitates a structured yet flexible approach to business development, accommodating the dynamic nature of MSMEs ecosystems. However, limited research has explored the integration of IC and EE through SSM, particularly in the context of community-based MSMEs. This gap highlights the need for further empirical investigation into how SSM can be employed to enhance MSMEs sustainability and competitiveness.

This research uncovers key leverage points and constraints within MSME ecosystems through in-depth interviews and system modeling pretty thoroughly nowadays. This study aims 1) identify key IC and EE factors influencing performance of community-based MSMEs 2) apply SSM analyzing and structuring business dynamics of such MSMEs and 3) propose a rather holistic adaptable model enhancing resilience competitiveness and sustainability of community-based MSMEs remarkably. Novelty lies in the approach embedding IC and EE integration within socio-economic cultural contexts of community-based enterprises deeply nowadays. A participatory knowledge-based model emerges reflecting complexity and interdependence prevalent in MSMEs ecosystems of rapidly evolving emerging markets nowadays. Findings offer a practical roadmap empowering community-based MSMEs amid a volatile global economy increasingly driven by rapid digitalization.

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LITERATURE REVIEW

Intellectual capital (IC) and its role in business performance

Intellectual capital (IC) drives business performance through human, structural, and relational components (Faria et al., 2023; Hariyono & Narsa, 2024; Octasylva et al., 2022) that enhance productivity and innovation (Subramaniam & Youndt, 2005; Youndt et al., 2004). Studies show IC helps MSMEs capitalize on social opportunities, develop innovation capabilities, and improve competitiveness, especially in emerging markets (Dixit et al., 2025; Marinho & Costa Melo, 2022). While firms with high IC investment demonstrate greater adaptability, many MSMEs in developing countries struggle to optimize IC due to limited resources (Abredu et al., 2023; Javed et al., 2023; Larios-Francia & Ferasso, 2023; Papíková & Papík, 2022; Phonthanukitithaworn et al., 2023). An integrated strategy linking IC development with supportive EE is essential for business sustainability.

Entrepreneurship ecosystem and MSMEs growth

Entrepreneurship ecosystems (EE) encompass external factors like financial resources, regulations, market access, and networking opportunities that influence MSMEs success (Acs et al., 2017; Stam, 2015). Key components includes culture, policy, finance, human resources, markets, and support which impact business resilience by fostering innovation, reducing barriers, and improving capital access (Autio et al., 2018; Syamsari et al., 2022). Government agencies, financial institutions, and business associations shape EE through incentives, training, and policy support (Mason & Brown, 2014). However, many community-based MSMEs in emerging markets face ecosystem fragmentation with weak policies, inadequate financing, and insufficient infrastructure, hindering scalability and competitiveness (Bruton et al., 2013). Addressing these challenges requires integrating IC with EE to create more resilient business environments.

Community-based MSMEs and their unique challenges

Community-based MSMEs significantly contribute to local economies through employment generation and cultural heritage preservation. These enterprises operate within women's cooperatives, indigenous communities, and rural entrepreneurs, supporting inclusive economic development (Hidayat et al., 2024; Isenberg, 2011). In India, MSMEs use digital technologies to protect cultural heritage while addressing sustainable development goals (Mohanty & Swain, 2022), while Indonesian MSMEs leverage social capital to empower communities and preserve local culture (Rudito et al., 2021). Despite their importance, these businesses face challenges including limited access to formal financing, weak management skills, inconsistent market linkages, and regulatory barriers (Davidsson & Honig, 2003; Phonthanukitithaworn et al., 2023). Solutions include strengthening relational capital through networking and digital platforms (Vale et al., 2022) and implementing tailored policies like microcredit programs and simplified licensing (Benites Gutiérrez et al., 2020). A holistic approach integrating intellectual capital and entrepreneurship ecosystems is crucial for sustainable growth.

Business performance and sustainability in MSMEs

Business performance in MSMEs is measured through financial growth, market expansion, and innovation capacity. Research shows that firms effectively integrating intellectual capital (IC) and entrepreneurship ecosystems (EE) achieve higher productivity, competitive advantage, and stability (Dwiputri et al., 2023). Success determinants include financial literacy, strategic planning, technology adoption, and market adaptability (Ardito et al., 2021; Rustiarini et al., 2022). Strategic IC management within supportive EE is essential for enhancing competitiveness, driving innovation, and ensuring sustainability (Prakasa, 2019). However, MSMEs often struggle to align growth strategies with sustainable practices in resource-constrained environments. Stakeholder collaboration, cross-sector partnerships, and digital financial inclusion are critical for fostering sustainability (Teoh et al., 2024). By leveraging IC and EE, MSMEs can build robust business models supporting long-term resilience and adaptability.

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Soft system methodology as a strategic innovation tool

Soft Systems Methodology (SSM) is an valuable strategic innovation approach that helps analyze complex environments and develop conceptual models for strengthening MSMEs competitiveness (Díaz et al., 2019; Hasanah et al., 2021; Ritonga, 2022). SSM focuses on participatory problem-solving by involving multiple stakeholders in system analysis, ensuring that solutions are contextually relevant and sustainable. Key success factors in implementing SSM include fostering internal motivation, encouraging technology adoption, and facilitating stakeholder cooperation (Hasanah et al., 2021). Collaboration among academia, industry, and government is essential in supporting entrepreneurial development and ensuring that interventions address the real needs of MSMEs (Ritonga, 2022). This study applies SSM to develop a business performance model that integrates IC and EE, providing a structured framework for enhancing MSMEs sustainability in emerging markets.

METHODS

Research design

This study employs a qualitative research design, integrating Soft System Methodology (SSM) to explore the complex interactions between IC and EE in shaping community-based MSME business performance. SSM is chosen due to its ability to address unstructured, multi-stakeholder challenges in dynamic environments, making it highly applicable for MSMEs in emerging markets (P. Checkland, 1981; P. B. Checkland & Poulter, 2006). Unlike traditional quantitative methods, SSM enables a participatory, iterative approach that incorporates stakeholder perspectives, ensuring contextually relevant solutions (Wilson, 2001). The research design follows a three-phase approach: (1) problem identification through literature review and preliminary field observations, (2) data collection and thematic analysis to map key IC and EE components affecting community-based MSMEs sustainability, and (3) system modeling and validation using stakeholder feedback to refine the proposed business performance model. This structured yet flexible framework allows for adaptive learning and strategic innovation, aligning with the dynamic needs of MSMEs in emerging markets.

Respondent selection and data sources

This research used purposive sampling to engage stakeholders with direct knowledge of community-based MSME development. Respondents included ten community MSME players from various Indonesian regions (Bogor City, Bogor Regency, Lebak-Banten Regency, Lombok Regency, and Bali Province) representing four community clusters: women's communities, indigenous communities, forest farmer groups, and tofu/tempeh artisans. Selection criteria followed Government Regulation Number 7 of 2021, considering community participation, social/environmental benefits, financial independence, and cultural preservation. Expert respondents included academics, entrepreneurship specialists, policy experts, banking professionals, and practitioners with 10-35 years of experience across various sectors.

The community-based MSMEs actors in this study are grouped into four clusters: women’s communities, indigenous communities, forest farmer groups (KTH), and tofu-tempe artisans. They operate across various sectors, including crafts, agroforestry, food production, and ecotourism. Business durations range from 1 to 44 years, reflecting a mix of emerging and established enterprises. Expert respondents include professionals with 10–35 years of experience in entrepreneurship, MSMEs policy, tourism, forestry, banking, indigenous community development, and women’s empowerment.

Data collection and data analysis

Primary data collection

Primary data were collected through semi-structured interviews and observations with key stakeholders, including community-based MSMEs actors, policymakers, financial institution representatives, and entrepreneurship support practitioners.

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Secondary data collection

Secondary data were sourced from government reports, policy briefs, industry whitepapers, and academic studies to provide contextual support and validate the primary findings. Additionally, publicly available databases on MSMEs performance, financial accessibility, and regulatory policies were analyzed to complement the qualitative insights gathered through interviews.

Data analysis

Data analysis in this study was conducted using thematic analysis based on Braun & Clarke's (2006) framework, through the stages of data familiarization, coding, theme identification, and interpretation to explore the role of Intellectual Capital (IC) and Entrepreneurship Ecosystem (EE) in MSMEs sustainability. A deductive-inductive approach was applied by combining existing themes in the literature with new findings from the interview data. In addition, Soft System Methodology (SSM) was used as an analytical tool with rich picture techniques to map stakeholder interactions, systemic barriers and potential intervention points (P. Checkland & Scholes, 1999). This systems-based approach is considered effective in understanding the complex challenges in the MSME ecosystem, and provides a structured analytical framework for the contribution of IC and EE in building resilience and strategic innovation of community-based MSMEs (Barusman et al., 2020; P. B. Checkland & Poulter, 2006). Data collection and analysis were conducted using SSM approach, through the following steps (Figure 1):

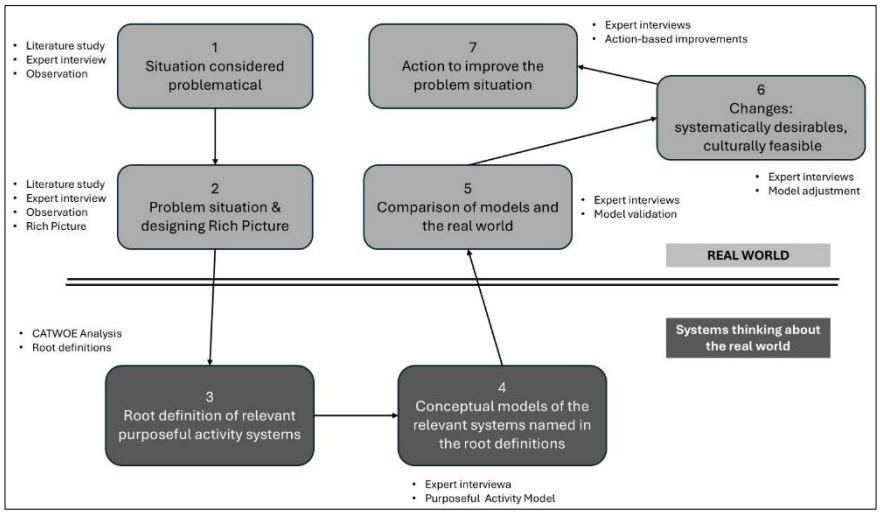

Figure 1. Seven steps of soft system methodology (SSM) approach

The methodology follows the seven-stage SSM framework, ensuring a comprehensive analysis that incorporates stakeholder perspectives, problem identification, conceptual modeling, and implementation strategies. Additionally, rich picture diagrams and CATWOE analysis (customer, actor, transformation, worldview, owner, environment) are utilized to construct a holistic representation of MSMEs business dynamics (P. Checkland, 1981; Wilson, 2001).

RESULTS

Step 1: Identifying problematic situations that are considered problems

In Step 1, there are three phases of analysis needed to create a rich picture for the second step of SSM. Checkland and Poulter (2006) emphasize the importance of three initial stages of analysis to understand real-world situations, including: intervention analysis, social analysis, and political analysis.

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Intervention analysis

The role analysis in this study refers to three main categories in accordance with the Soft System Methodology (SSM) approach, namely client, practitioner, and issue owner (Checkland and Poulter, 2006). The party that acts as a client is a community-based MSME actor who triggers an intervention on the problem under study. The practitioner is the researcher who carries out the research process with the SSM approach. Meanwhile, those who act as issue owners are institutions that have a direct interest in the results of improving the situation, such as ministries (The Ministry of Cooperative and SMEs, The Ministry of Environment and Forestry, The Ministry of Tourism, and The Ministry of Creative Economy), Financial Services Authority (OJK), universities, financial and banking institutions, non-governmental organizations such as Indigeneous Peoples' Alliances of the Archipelago (AMAN), National Craft Council (DEKRANAS), Indonesian Tempeh and Tofu Cooperative Association (KOPTI), and technology companies. These roles are not rigid, as in practice, one party may hold more than one role depending on the context and involvement.

Social analysis

The social analysis, examines the socio-cultural structures influencing the problem. This phase evaluates roles, norms, and values to understand how behaviors, expectations, and institutional frameworks shape stakeholder interactions (Fitriati, 2015). In the MSMEs ecosystem, government bodies act as facilitators and regulators, providing training, financial access, and policy support. Higher education institutions contribute research and technical assistance, while investors and financial institutions ensure capital accessibility and promote digitalization. Meanwhile, organizations such as the Indigenous Peoples' Alliance of the Archipelago (*Aliansi Masyarakat Adat Nusantara*-AMAN) advocate for the preservation of traditional business models.

Political analysis

Political analysis in the context of community-based MSMEs development highlights the distribution of power and decision-making that influence the success of interventions (Hardjosoekarto, 2012). In the MSMEs sector, formal power rests with the government and financial institutions, while informal forces such as industry networks and community initiatives also play an important role. The tension between formal institutions and grassroots actors indicates the need for collaboration in policy implementation. Preliminary findings show that MSMEs in the four main clusters face fundamental challenges in human capital, structural capital and relational capital, exacerbated by weak entrepreneurship ecosystems (EE). Problems include limited business management, low financial literacy, resistance to digitalization, non-standardized production methods, weak business networks, and limited access to markets and financing. Policy mismatches, lack of infrastructure, and limited business development services are also obstacles. Visual representations through Rich Picture Diagrams show the complexity and interconnectedness of actors, policies, and structural challenges that slow MSMEs performance.

Step 2: Expressing the problematic situations and compiling rich pictures (RP)

The Rich Picture identifies three main roles: clients (community-based MSME actors), practitioners (researchers), and issue owners with a vested interest in the outcomes. Analysis through observation and in-depth interviews reveals that actors influencing MSMEs performance operate at micro (direct actors), meso (service providers and infrastructure), and macro (policymakers and regulators) levels. Figure 2 visualizes the complex interactions within the MSMEs ecosystem and highlights key challenges such as limited access to finance, weak market integration, and uneven technology adoption. Despite contributions from institutions like Financial Service Authority (OJK), the Ministry of Cooperatives and SMEs, the Ministry of Environment and Forestry, the Ministry of Tourism, and the Ministry of Creative Economy, tech firms (Google, Meta, Grab), and cultural organizations (DEKRANAS, AMAN), persistent barriers remain in developing intellectual capital, innovation, and digital infrastructure. Accordingly, Figure 2 emphasizes the urgency of a systemic, cross-sectoral collaboration to strengthen MSMEs resilience and competitiveness.

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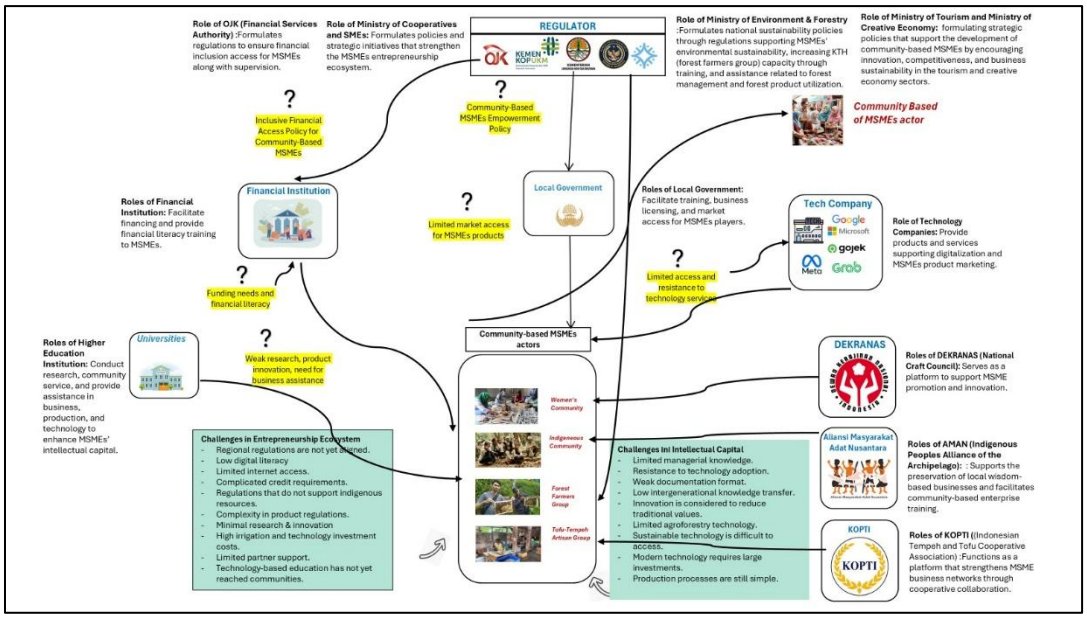

Figure 2. Rich picture

Step 3: Formulating root definitions of relevant purposeful activity systems using CATWOE analysis

In the third stage, root definition formulation and CATWOE (Customer, Actors, Transformation Process, Worldview, Owner, and Environment) analysis were conducted to understand the system thoroughly. Root definition is a short statement describing system activities aimed at solving the main problem (Checkland & Scholes, 1999). The conceptual model developed is logical and does not directly reflect real conditions, but is designed to achieve certain goals (Checkland, 1996). In this research, the root definition formulated using the PQR structure is: "Designing a business performance model for community-based MSMEs (P) to transform the underutilized intellectual capital and fragmented entrepreneurial ecosystem (Q), into an integrated innovation-based business performance model to improve the resilience, competitiveness, and sustainability of community-based MSMEs in developing countries (R)." This definition was then tested and refined through CATWOE analysis, the results of which are presented in Table 1.

Table 1. CATWOE Analysis based on root definition

Element	Definition	Application in This Study
Customers (C)	Parties who receive direct benefits from the transformation carried out to improve competitiveness, sustainability, and business productivity. Parties who gain access to higher quality, innovative, and sustainable products.	• Community-based MSME actors (women's communities, indigenous communities, forest farmer groups, and tofu and tempeh artisan groups) • External customers (local, national, and international markets)
Actors (A)	Stakeholders interested in carrying out the transformation of the design and performance model of community-based MSMEs businesses	Ministry of SMEs, Ministry of Environment and Forestry, OJK, Ministry of Tourism, Ministry of Creative Economy, related agencies in local governments, universities, investors and financial institutions, technology companies, National Craft Council, Indigenous Peoples Alliance of the Archipelago (AMAN), KOPTI
Transformation Process (T)	The transformation process in designing a community-based MSMEs business performance model	The design of a community-based MSMEs business performance model through integrated intellectual capital and entrepreneurial ecosystems.

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Worldview (W)	A perspective or framework that provides significant meaning to the transformation process in designing a community-based MSMEs business performance model, which encourages collaboration between actors, is adaptive to technology, supports social inclusion and sustainability.	Integration and synergy between stakeholders in designing and building a community-based MSMEs business performance model
Owners (O)	The party that has the authority to stop or transform the performance system of community-based MSMEs businesses	Ministry of SMEs as the main owner of policies and incentives; Universities, technology companies, financial institutions: as supporters of system execution and sustainability.
Environmental Constraints (E)	Environmental factors (both internal and external) that inhibit, limit, and influence the course of transformation of community-based MSMEs business performance systems	Resistance to modernization, unequal access to technology, limited access to formal financing, distribution of authority between the Central and Regional Governments

To develop the Root Definition into a conceptual model, a trial refinement was conducted using the CATWOE analysis tool (Hardjosoekarto, 2012). Performance metrics were established to validate the credibility of the human activity system described in the Root Definition, which was then tested and completed through CATWOE. These metrics, known as the "5E" criteria by Checkland and Scholes (1999), include efficacy, efficiency, effectiveness, elegance, and ethics (see Table 2).

Table 2. 5E Analysis based on Root Definition

Element	Definition	Application in This Study
Efficacy	Measures how effectively the transformation process of system activities serving this goal can truly occur to achieve the desired results.	The transformation of the business performance model for community-based MSMEs must happen correctly and produce the expected goals.
Efficiency	Measures how effectively the ongoing transformation is carried out using minimal resources.	The transformation of the business performance model for community-based MSMEs is conducted by optimizing existing resources.
Effectiveness	Measures whether changes in the system related to the goal can help achieve larger or long-term objectives.	The transformation of the business performance model for community-based MSMEs helps improve business performance, competitiveness, and sustainability.
Elegance	The criterion determines whether the system activity changes that serve the goal are carried out in an elegant manner.	The transformation of the business performance model for community-based MSMEs is conducted in a refined and proper way.
Ethics	Standards set to determine whether intended changes to the system activities are morally acceptable.	The transformation of the business performance model for community-based MSMEs is carried out while maintaining norms and ethics applicable in society.

The 5E analysis in this study assesses the transformation of the community-based MSMEs business performance model across five dimensions: efficacy, efficiency, effectiveness, elegance, and ethics. It highlights the need for transformation processes that are impactful, resource-efficient, sustainable, aesthetically coherent, and aligned with societal values and ethical standards.

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Step 4: Building a conceptual model of the system, while conduct interview with community-based MSMEs actors and expert respondents

This stage focused on developing a conceptual model based on the Root Definition and CATWOE analysis, representing a logical framework for enhancing the performance of community-based MSMEs. Following Checkland (1999) and Wilson (2001), the model reflects the desired system behavior using consistent language and logical activity relationships. Constructed through participatory interviews with 10 MSMEs actors and 10 expert respondents, the model was validated and refined to align with real operational conditions, cultural relevance, and institutional expectations—critical for implementation in developing countries.

Figure 3 presents a conceptual model for improving the performance of community-based MSMEs by integrating Intellectual Capital (IC) and the Entrepreneurship Ecosystem (EE) through ten interconnected strategic actions. The model begins with human capital development via entrepreneurship, management, and technology training, as well as embedding entrepreneurship education in community curricula. It includes partnership building, digital marketing, simple technology adoption, and inclusive policy advocacy. Key enablers comprise microcredit and crowdfunding, e-commerce optimization, enhanced internet and logistics infrastructure, cultural integration in product innovation, and MSME collaboration. Designed as a systemic framework, the model promotes adaptive and sustainable innovation aligned with social, cultural, and institutional contexts. It applies Soft System Methodology (SSM) principles, incorporating feedback and monitoring to ensure contextual relevance and practical effectiveness (Checkland & Poulter, 2006).

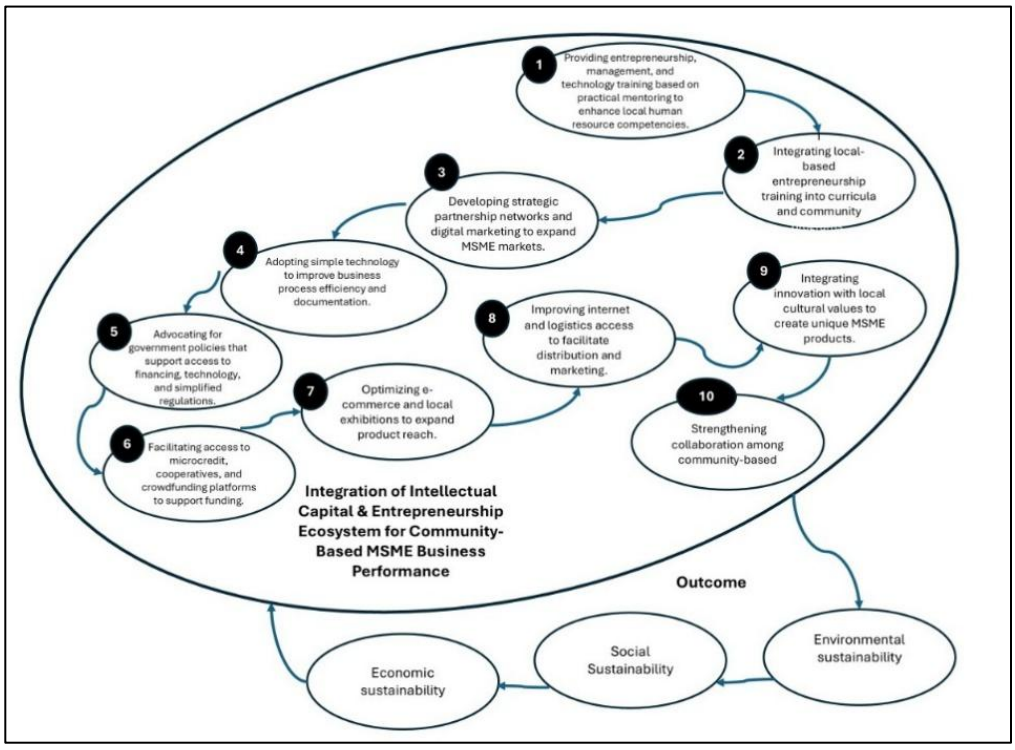

Figure 3. The conceptual model for community-based MSMEs business performance through IC and EE

Step 5 and 6: Comparison of conceptual model activities with exsisting real conditions while validating the model, and ensure the model is systematically desirable and culturally appropriate

In the fifth and sixth stages of Soft System Methodology (SSM), a critical comparison is made between the conceptual model and actual field conditions to assess its alignment with the socio-economic and cultural realities of community-

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based MSMEs. As Hardjosoekarto (2012) emphasizes, the conceptual model serves as a tool for understanding complexity rather than representing absolute reality. Similarly, Checkland and Poulter (2006) highlight that the purpose of this comparison is to test applicability, not to critique existing conditions. Validation was conducted through reflective sessions with MSME actors and experts, integrating both practical experience and institutional insights. The results confirmed strong alignment in areas such as entrepreneurship training, technology adoption, digital marketing, and inclusive financing policies. However, challenges remain, including weak institutional coordination, low literacy on funding platforms, and inadequate e-commerce and logistics infrastructure. Despite these issues, the model is deemed systemically feasible—supporting inclusive growth, innovation, and cross-sector collaboration—and culturally appropriate, as it respects local values. Iterative feedback further enhanced its practicality and adaptability for MSMEs development in emerging contexts (Table 3).

Table 3. Comparison of the conceptual model with real-world conditions and improvement actions

Conceptual Model Activities	Actual Conditions in the Real-World	Existing Gaps	Proposed Improvement Actions
Activity 1: Providing entrepreneurship, management, and technology training based on practical mentoring to enhance local human resource competencies.	Training is available but still lacks sufficient practical elements.	Lack of practical approach in training.	Increasing the practical component and mentoring in training.
Activity 2: Integrating local-based entrepreneurship training into curricula and community programs.	Entrepreneurship training is generally part of formal curricula but not in community settings.	Minimal integration of training into the education system.	Encouraging the integration of entrepreneurship training into the local education curriculum.
Activity 3: Developing strategic partnership networks and digital marketing to expand MSME markets.	Strategic partnership and digital marketing are not optimally utilized by MSMEs.	Lack of access to information and training on digital marketing and partnerships.	Providing digital marketing training and facilitating strategic partnerships.
Activity 4: Adopting simple technology to improve business process efficiency and documentation.	Adoption of simple technology is still limited due to low technological literacy among MSMEs.	Minimal training and assistance in simple technology adoption.	Providing sustainable training on simple technology literacy.
Activity 5: Advocating for government policies that support access to financing, technology, and simplified regulations.	Financing policies are often complex, making it difficult for MSMEs to access.	Strict financing requirements that are not friendly to small MSMEs.	Simplifying financing procedures and increasing financial inclusivity.
Activity 6: Facilitating access to microcredit, cooperatives, and crowdfunding platforms to support funding.	Alternative financing sources such as crowdfunding are not widely utilized by MSMEs.	Low awareness and access to crowdfunding platforms and microcredit.	Expanding socialization and access to crowdfunding platforms and microcredit.
Activity 7: Optimizing e-commerce and local exhibitions to expand product reach.	E-commerce and exhibitions are widely available, but MSMEs struggle with optimization due to a lack of knowledge and digital literacy.	MSMEs' limited ability to maximize the potential of digital platforms.	Strengthening e-commerce training and increasing MSMEs' involvement in digital platforms.
Activity 8: Improving internet and logistics access to facilitate distribution and marketing.	Limited internet and logistics infrastructure hinder product distribution and marketing for MSMEs.	Internet and logistics infrastructure are still inadequate.	Expanding internet networks and developing an integrated logistics system.

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Activity 9: Integrating innovation with local cultural values to create unique MSME products	Local culture-based product innovation is still not widely encouraged by MSME players.	Lack of awareness and education on the importance of local culture-based innovation.	Promoting education and campaigns on culture-based innovation.
Activity 10: Strengthening collaboration among community-based MSMEs.	Collaboration among community-based MSMEs remains weak and unorganized.	Lack of initiatives to organize and support community collaboration.	Establishing working groups or collaboration forums among community-based MSMEs.

Step 7: Evaluate the model for further improvement, formulate real actions based on real situations faced by community-based MSMEs actors

In the final SSM stage, the conceptual model was evaluated collaboratively with community-based MSMEs actors and experts to formulate practical actions addressing real challenges. Through participatory workshops and in-depth interviews, researchers identified that improving community MSMEs performance requires an integrated approach covering eight key aspects: HR competency development, digital ecosystem and partnership strengthening, infrastructure development, policy reform and financing access, local culture-based innovation, community collaboration enhancement, e-commerce and local promotion optimization, and performance monitoring and evaluation. Figure 4 vividly illustrates this somewhat amorphous framework by rather intricately merging elements of Intellectual Capital with Entrepreneurship Ecosystem components. Five MSMEs actor groups including women's communities and tempe artisan collectives are identified as primary beneficiaries receiving support from various stakeholders like local governments and financial institutions and technology companies. Concrete stakeholder roles in training funding and regulatory reform underpin each strategic component heavily across various sectors and domains effectively. Participatory evaluation contextualizes a model highly applicable in emerging markets and promotes sustainable MSMEs grounded in innovative knowledge.

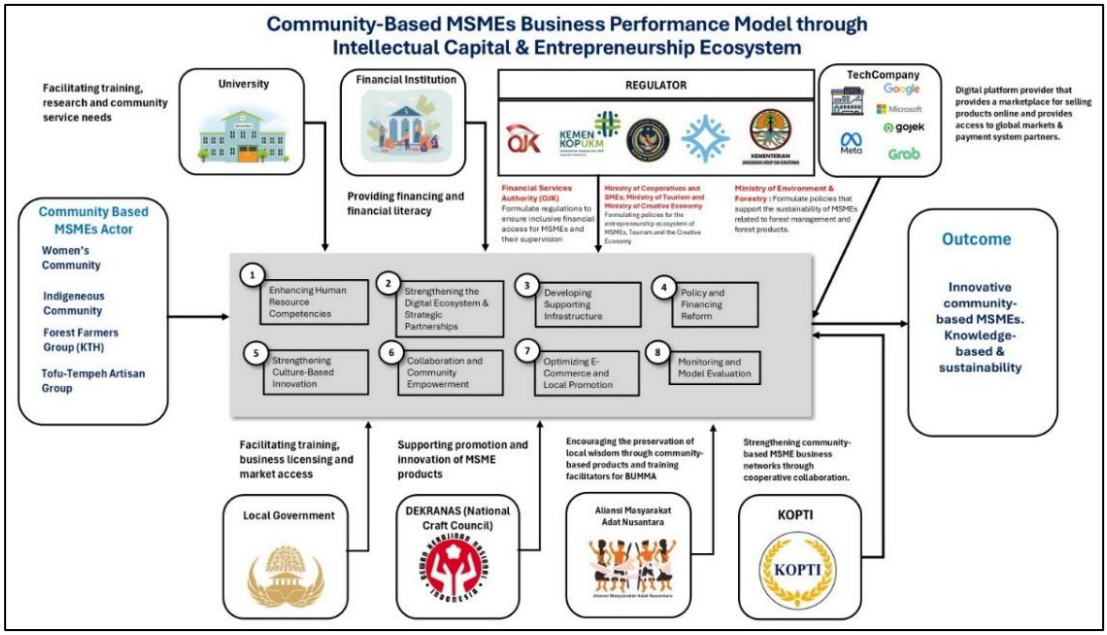

Figure 4. Community-based MSMEs business performance model through intellectual capital and entrepreneurship ecosystem

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DISCUSSION

Community-based MSMEs survive financial crises, pandemics, or global instability

Community-based MSMEs show high resilience in the face of crises such as pandemics, macroeconomic instability, and financial shocks, thanks to their attachment to local communities that enable the utilization of social capital, informal networks, and adaptive resources (Phonthanukitithaworn et al., 2023; Davidsson and Honig, 2003). When the COVID-19 pandemic hit, many community MSME players quickly adopted digital technologies, customized products, and used community-based distribution to sustain the market, mainly through relational capital that relies on the trust of customers and local stakeholders (Dwiputri et al., 2023). This resilience is strengthened by a supportive entrepreneurial ecosystem (EE), such as access to local financing, training, and relevant policies (Bruton et al., 2013; Stam, 2015). In addition, the integration of Intellectual Capital (IC)-particularly human and structural capital-drives MSMEs' adaptability through capacity building, digital literacy, and organizational learning (Battisti et al., 2019; Sullivan-Taylor & Branicki, 2011). These findings confirm the importance of inclusive and adaptive innovation systems tailored to the needs of grassroots MSMEs, especially in developing countries with limited institutional infrastructure (Williams & Vorley, 2015).

Strategic innovation through IC and EE integration

The findings reaffirm the strategic importance of Intellectual Capital (IC) and the Entrepreneurship Ecosystem (EE) in enhancing the performance of community-based MSMEs. Applying the Soft System Methodology (SSM) offers a holistic lens to examine stakeholder dynamics, systemic barriers, and optimization strategies. Prior studies highlight the need for synergy between IC and EE to foster innovation, financial resilience, and market growth (Subramaniam & Youndt, 2005; Stam, 2015). Recent works further stress the value of a dynamic, systems-based approach to understanding the IC–EE nexus in post-crisis MSME development (Dixit et al., 2025; Senes et al., 2025).

Marinelli et al. (2022) demonstrate that IC significantly contributes to innovation-based ecosystems, emphasizing knowledge acquisition and sharing as critical drivers of entrepreneurial success. Despite widespread recognition of IC as a determinant of business performance, its interaction with EE remains underexplored in MSMEs contexts. This study addresses the gap by showing that ecosystems must be adapted to leverage MSMEs' knowledge assets such as human, structural, and relational capital effectively.

IC also plays a pivotal role in entrepreneurship and risk management, particularly in volatile economies, serving as a competitive advantage in knowledge-driven markets (Asaliev & Orlova, 2021). Well-managed IC can mitigate risks related to human competencies, relational trust, and market fluctuations, influencing strategic decision-making and enhancing competitiveness (Ibraimi & Rexhepi, 2011).

Human capital and managerial competency

The results underscore a significant human capital deficit among community-based MSMEs. Entrepreneurship success is often contingent on business acumen, financial literacy, and digital adaptability—factors that were found to be lacking in many of the surveyed MSMEs. Prior research confirms that human capital investment drives long-term business sustainability, yet access to structured training and skill development varies widely across different MSME groups, creating an uneven playing field for these small enterprises (Davidsson & Honig, 2003; Unger et al., 2011).

Thus, entrepreneurial training must be embedded in local communities to be effective. Current government and academic programs have limited impact due to low participation, impractical content, and inadequate mentorship. The research suggests localized, hands-on learning approaches would better develop business skills and support knowledge transfer, particularly in traditional and indigenous business communities.

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Structural capital and business efficiency

A core limitation in MSMEs development is the lack of standardized business processes and technological infrastructure. The study finds that structural capital, including formalized workflows, documentation, and digital integration, is largely absent in many MSMEs. This is consistent with previous research indicating that process inefficiencies and weak knowledge management hinder business scalability and financial resilience (Youndt et al., 2004).

MSMEs using digital tools, data-driven decisions, and e-commerce achieved better efficiency and market reach. However, many businesses couldn't fully utilize these technologies due to gaps in financial and digital literacy. The model recommends that ecosystem partners like financial institutions and tech providers should support structural capital investment to help MSMEs transition more effectively to digital operations.

Relational capital and market access

The study reveals that relational capital—the ability to establish and sustain strategic partnerships—is a major determinant of MSMEs growth. Weak networking capabilities, limited market exposure, and reliance on local consumer bases have restricted many community-based MSMEs from expanding their revenue streams. This aligns with findings from prior research emphasizing that business networks, mentorship opportunities, and ecosystem collaborations significantly enhance MSMEs resilience (Acs et al., 2017; Stam, 2015)

Public-private partnerships and community business clusters significantly strengthen relational capital. MSMEs participating in collaborative value chains, digital marketing alliances, and industry forums achieved better market penetration and sustained growth. The research shows that an ecosystem approach—where government agencies, NGOs, financial institutions, and large corporations support MSMEs connections—is vital for building relational capital in community-based businesses.

Entrepreneurship ecosystem challenges and policy interventions

Although the integration of Intellectual Capital (IC) and Entrepreneurship Ecosystem (EE) has great potential, MSMEs still face challenges such as regulatory barriers, limited access to finance, and fragmented policy support. The study found that government programs such as microfinance and digital inclusion policies are often ineffective due to bureaucracy and lack of local adaptation (Bruton et al., 2013; Isenberg, 2011). In fact, an entrepreneurial ecosystem that is interconnected and aligned with policies can drive innovation and market expansion (Autio et al., 2018; Mason & Brown, 2014). However, there is a gap between the needs of MSMEs and existing policies, which calls for reforming financial support mechanisms and regulations.

Streamlining loan processes, enhancing financial education, and improving digital payment systems will help small businesses join the formal economy. Universities and research institutions remain underutilized resources. Policies should promote partnerships between academics and businesses to boost innovation and build capacity through incubation programs connected to higher education institutions.

Comparative analysis with prior studies

In contrast to prior research that predominantly examines IC and EE separately, this study provides an integrated model that acknowledges their interdependence. While previous literature establishes that IC enhances business innovation and sustainability, it rarely addresses how ecosystem dynamics influence the realization of IC's benefits (Subramaniam & Youndt, 2005). This study's findings diverge from traditional MSME development models by emphasizing the role of SSM in structuring MSMEs business frameworks. Unlike static models that propose one-size-fits-all policy solutions, the SSM-based approach ensures adaptability, stakeholder engagement, and iterative problem-solving, making it particularly suitable for community-based enterprises facing diverse socio-economic challenges (Checkland & Poulter, 2006; Wilson, 2001).

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Strategic implications for MSMEs Development

The integration of IC and EE presents several strategic implications for policymakers, financial institutions, and business development agencies. This study emphasizes that business support interventions should not focus solely on financial aid but must include ecosystem-based capacity building. Additionally, entrepreneurial education, digital transformation, and strategic networking should be central components of future MSMEs policies. Moreover, this study underscores the importance of continuous monitoring and ecosystem adaptation. MSMEs operate in fluid, dynamic environments where market trends, consumer behaviors, and technological advancements rapidly evolve. Policymakers and ecosystem actors must therefore adopt flexible, data-driven approaches to support MSMEs growth in an increasingly digital economy. This includes developing shared understanding of IT challenges among stakeholders and implementing comprehensive support programs like training and coaching initiatives (Pelletier & Cloutier, 2019)

Enhancing community-based MSMEs performance through IC and EE

The development of MSMEs in community-based settings necessitates a comprehensive approach that integrates IC and EE. This study, utilizing the SSM, has identified eight key activities essential for optimizing MSMEs performance: (1) improving human resource competence, (2) strengthening the digital ecosystem and strategic partnerships, (3) developing supporting infrastructure, (4) policy and financing reform, (5) strengthening local culture-based innovation, (6) collaboration and community strengthening, (7) optimizing e-commerce and local promotion, and (8) monitoring and evaluating the model. The following discussion synthesizes insights from literature, contextualizing them within the real-world challenges faced by community-based MSMEs.

Improving the competence of human resources for community-based MSMEs actors

Human capital is a key factor in entrepreneurial success and business sustainability (Davidsson and Honig, 2003), but limitations in managerial skills, financial literacy, and digital adaptation are still major obstacles for MSMEs actors (Papíková & Papík, 2022). Knowledge-based resources such as Intellectual Capital (IC) have been shown to improve MSMEs performance through encouraging innovation, financial stability, and competitive advantage (Dwiputri et al., 2023). Experiential learning and mentoring programs are more effective in accelerating skills improvement than conventional training (Unger et al., 2011).

Business incubation models integrated with mentorship programs provide MSMEs actors with practical experience in facing real challenges, thereby improving their decision-making capacity and strategic planning (Daat et al., 2021). Digital transformation also plays an important role in increasing the adaptability of MSMEs through technology-based business solutions (Rustiarini et al., 2022). Therefore, capacity building programs that emphasize financial management, technological literacy, and sustainable business practices are needed (Abredu et al., 2023). For this reason, policy makers and business developers should prioritize structured competency development initiatives that optimize IC, digital adaptation, and mentoring-based learning to promote sustainable growth of MSMEs.

Strengthening the digital ecosystem and strategic partnerships

Digital transformation is a key driver of business resilience, especially in responding to economic disruption due to the global crisis (Isenberg, 2011). However, community-based MSMEs face significant barriers such as low technological literacy and financial limitations (Suryantini et al., 2023). Digital platforms are proven to overcome these challenges through access to e-commerce, cloud-based business solutions and data-driven decision-making tools (Benites Gutiérrez et al., 2020). Accelerating digital adoption requires strategic collaboration between MSMEs and technology providers to produce solutions that suit local needs (Suryantini et al., 2023), as well as government policy support that encourages digital infrastructure investment (Benites Gutiérrez et al., 2020). By integrating digital strategies and capacity building programs, MSMEs can improve their resilience and sustainability in the digital economy.

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Development of Supporting Infrastructure

Infrastructure deficiencies, particularly inadequate internet connections and inefficient logistics networks, are significant barriers to MSME competitiveness. Research shows that improving digital and logistics infrastructure can expand market access and improve the overall operational efficiency of MSMEs (Benites Gutiérrez et al., 2020). Widespread internet access is essential for MSMEs to utilize e-commerce platforms, cloud-based solutions, and digital marketing strategies. Collaboration between the government and the private sector is needed to strengthen this infrastructure through the establishment of shared logistics centers and the provision of financial technology services, including digital payment systems and access to financing. With an integrated approach involving policymakers, industry players, and technology providers, strengthening infrastructure will boost the resilience and sustainability of MSMEs in the digital era.

Policy and financing reform

Access to finance remains a major challenge for MSMEs as bureaucratic procedures and strict lending criteria hamper the effectiveness of traditional microfinance programs (Phonthanukitithaworn et al., 2023). Alternative financing such as crowdfunding, venture capital, and digital finance platforms are now becoming more inclusive and flexible solutions for MSMEs (Ardito et al., 2021). Regulatory reforms are needed to simplify administrative processes, increase financial transparency, and encourage financial institutions to provide credit facilities that suit the needs of MSMEs (Benites Gutiérrez et al., 2020). The integration of digital financial services, including mobile banking and blockchain-based transactions, can also improve financial inclusion. With well-targeted policies and support for innovative financing models, a more inclusive and sustainable financial ecosystem can be built to support the growth of community-based MSMEs.

Strengthening local culture-based innovation

Cultural heritage and local knowledge provide a unique market position for MSMEs, creating differentiation and competitive advantage. The integration of local cultural elements in product innovation and brand strategy is proven to increase consumer engagement and market uniqueness (Dwiputri et al., 2023), while supporting the preservation of traditional crafts and indigenous knowledge (Rustiarini et al., 2022). Supporting the commercialization of culture-based products requires the development of innovation hubs that provide access to research and development (R&D), digital marketing strategies and financing for traditional artisans (Abredu et al., 2023). Protection of intellectual property such as geographical indications and trademarks is also important to safeguard cultural works from exploitation and ensure that economic benefits remain with local actors (Suryantini et al., 2023).

Collaboration and community strengthening

The success and resilience of MSMEs rely heavily on the strength of business networks and community support. Weak relational capital, such as lack of collaboration and limited market access, hinders growth and access to critical resources (Vale et al., 2021). Cooperative business cluster formation has been shown to increase efficiency, bargaining power and collective knowledge sharing, thereby promoting business sustainability (Rustiarini et al., 2023). To overcome these challenges, activities such as sectoral business forums, cross-sector partnerships, and utilization of digital platforms can strengthen inter-MFI networks and improve operational efficiency (Chern & Ahmad, 2024; Teoh et al., 2024).

Optimizing e-commerce and local promotion

The adoption of e-commerce has been a transformative factor in driving MSMEs growth, especially in expanding market reach and reducing dependence on physical stores. However, many community-based MSMEs still face obstacles in managing online stores, digital marketing, and data analysis due to limited knowledge (Senes et al., 2025). Training focused on digital business operations has been shown to significantly improve MSMEs e-commerce performance.

Strategic partnerships with large e-commerce platforms and fintech providers are also important to support digital transactions and logistics. In addition, digital marketing strategies and social media engagement play a major role in

increasing visibility and reaching new consumers. Government support through digital transformation subsidies and local business promotion campaigns can encourage MSMEs participation in the e-commerce sector.

Monitoring and evaluating the model

Continuous assessment and iterative improvement are critical to maintaining MSMEs growth and the effectiveness of business development strategies. Performance monitoring frameworks based on key performance indicators (KPIs), stakeholder feedback and real-time data analytics are proven to improve the long-term success of MSMEs (Daat et al., 2021). Collaboration with academic institutions also supports transparent and accountable evaluation of the impact of policies and programs supporting MSMEs (Dwiputri et al., 2023).

Digital transformation enables more precise and real-time performance tracking (Rustiarini et al., 2022). This study encourages the establishment of a centralized MSMEs monitoring system that integrates key performance metrics, financial health indicators, and market trends to support more responsive and targeted policies.

CONCLUSION

This study identifies the critical components of Intellectual Capital (IC) and the Entrepreneurship Ecosystem (EE) that influence the performance of community-based MSMEs. The findings reveal that limited managerial and digital skills, weak business structures, and underdeveloped relational networks constrain growth. External barriers such as fragmented policy support, inadequate financial services, and restricted technological access further weaken resilience. These challenges underscore the strategic role of IC particularly human, structural, and relational capital—when supported by a robust EE, in fostering sustainability, innovation, and competitiveness.

The application of Soft Systems Methodology (SSM) effectively captures and organizes the complex dynamics within community-based MSMEs. Using SSM's seven-stage approach, the study develops a conceptual model integrating stakeholder perspectives with local realities. The model proposes ten interconnected strategies, including capacity building, digital transformation, market access, and ecosystem collaboration. This systems-based, participatory framework enables adaptive and context-sensitive interventions that address not only surface-level issues but also the structural causes of underperformance.

This study proposes a holistic and adaptable model aligning Intellectual Capital (IC) and the Entrepreneurship Ecosystem (EE) to enhance the resilience, competitiveness, and sustainability of community-based MSMEs. The model promotes ecosystem-based strategies such as inclusive financing, strategic partnerships, and culturally rooted innovation that are scalable across various community clusters. It encourages policymakers, development agencies, and the private sector to adopt this approach to support inclusive and sustainable entrepreneurship in emerging markets.

Academically, the study contributes by integrating IC and EE through Soft Systems Methodology (SSM), bridging a key gap in MSMEs literature where these components are often treated separately. This integration offers a deeper understanding of how internal capabilities and external environments interact systemically. It also highlights the role of academic institutions, particularly university-based incubators, in fostering innovation, providing mentorship, and advancing applied research for MSMEs development.

Future research should explore longitudinal and comparative studies across sectors and regions to validate and refine the model, while also examining the integration of financial technology and digital business models to support ongoing adaptability amid global economic shifts.

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