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(AIJBES)**www.aijb.es.com**STRENGTHENING BIDAYUH WOMEN ENTREPRENEURS IN
KAMPUNG SINGAI, SARAWAK THROUGH THE 3D-IMPAK
MODEL FOR RURAL TRANSFORMATION**

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Abstract:

Rural micro-entrepreneurship plays a pivotal role in advancing socio-economic development, yet it remains fragmented and vulnerable, particularly among women in Indigenous communities. In Malaysia, policy frameworks such as the MADANI Economy and the MyDIGITAL Blueprint 2021–2030 emphasize inclusive entrepreneurship and the pledge to “leave no one behind.” However, the realities on the ground reveal that Bidayuh women entrepreneurs in Kampung Singai continue to face significant challenges, including digital exclusion, weak branding capacity, restricted market access, and limited support networks. These structural barriers prevent them from fully engaging with national agendas and leveraging opportunities in the digital economy. This article introduces the 3D-IMPAK Model, a community-driven framework designed to strengthen Bidayuh women entrepreneurs by integrating Digital Transformation, Indigenous Empowerment, and Social Enterprise. The model reframes rural entrepreneurship as a pathway not only for economic growth but also for cultural resilience, digital inclusion, and women’s collective agency. By promoting digital literacy, advancing indigenous branding, and fostering peer-based cooperative networks, the 3D-IMPAK approach addresses systemic gaps that hinder women’s participation and competitiveness. Aligned with

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Malaysia's national strategies and the Sustainable Development Goals (SDGs), this framework highlights the transformative potential of empowering Indigenous women entrepreneurs as catalysts for rural development. Ultimately, the study demonstrates that strengthening Bidayuh women entrepreneurs through the 3D-IMPAK Model contributes to building resilience, enhancing market competitiveness, and preserving dignity in the digital era, offering a replicable approach for inclusive and sustainable rural transformation.

Keywords:

Bidayuh Women Entrepreneurs, Rural Micro-Entrepreneurship, Indigenous Empowerment, Digital Inclusion, Social Enterprise, 3D-IMPAK Model

Introduction

Rural micro-entrepreneurship has emerged as a crucial catalyst for socio-economic advancement in Southeast Asia, providing employment opportunities and strengthening community resilience. In Malaysia, micro, small, and medium-sized enterprises (MSMEs) represent 97.4% of business establishments and contribute around 38% to national GDP. Within rural areas, the micro-entrepreneurship sector is the second-largest source of employment and plays a vital role in poverty reduction (Parthiban et al., 2024). These activities, which range from smallholder farming to cottage industries, are essential for raising rural incomes and achieving inclusive growth. However, their potential continues to be constrained by structural barriers, including the digital divide, policy inefficiencies, market limitations, and the marginalization of Indigenous communities. One of the most pressing challenges is the persistent digital divide between urban and rural regions. While urban areas rapidly adopt advanced technologies, many rural entrepreneurs are excluded due to weak infrastructure, low digital literacy, and inconsistent access to online markets. This gap is particularly evident in East Malaysia, where connectivity issues restrict the digital participation of Indigenous and geographically isolated communities despite ongoing government investments (Fang et al., 2022). These disparities are not merely technological but developmental, shaping who participates in and benefits from Malaysia's entrepreneurial economy. Indigenous entrepreneurs, especially women, face compounded exclusion due to geographic isolation, cultural and linguistic differences, and historically limited involvement in policy planning. Without access to context-sensitive platforms, training, and markets, they remain disconnected from national development agendas, raising critical questions about inclusivity and equity in policy implementation.

Over the past decade, Malaysia has introduced several frameworks to close these gaps. The MyDIGITAL Malaysia Digital Economy Blueprint (2021) seeks to expand nationwide digital access, while the MADANI Economy Framework (2023) emphasizes empowering marginalized groups through entrepreneurship, financing, and innovation (Government of Malaysia, 2023). Broader agendas such as the Twelfth Malaysia Plan and Wawasan Kemakmuran Bersama 2030 further highlight equitable digital transformation and rural development. Complementary policies including the National Entrepreneurship Policy 2030, the National 4IR Policy, and the Start-up Ecosystem Roadmap aim to build entrepreneurial capacity. While ambitious, these strategies often lack localized and culturally attuned models that address the realities of rural Indigenous communities. Despite these policy efforts, many rural micro-entrepreneurs continue to struggle with low digital readiness, limited confidence, and weak networks. Studies show that rural MSMEs, particularly women-led enterprises, are

often hesitant to adopt tools such as e-payments and social media marketing even where infrastructure exists (Ismail et al., 2023). Broader supply chain access remains limited, while knowledge disconnections further prevent entrepreneurs from aligning products with market demand (Parthiban et al., 2024). Restricted financing, training, and ecosystem support exacerbate these challenges, reducing productivity and resilience despite the presence of supportive policy frameworks (Jalil, 2021).

To address these interrelated challenges, this paper introduces a community-centric approach, the 3D-IMPAK Model, designed to empower Bidayuh women entrepreneurs in Kampung Singai. The model integrates three core elements: digital empowerment, Indigenous cultural branding, and peer-based social enterprise networks. Digital storytelling enables entrepreneurs to market their products authentically, cultural branding strengthens identity and visibility, and peer support reduces isolation through knowledge sharing, mentorship, and collaboration. Unlike one-size-fits-all interventions, 3D-IMPAK is grounded in the lived experiences of Kampung Singai and complements the aspirations of the MADANI and MyDIGITAL frameworks while advancing the Sustainable Development Goals.

Methodology

This study employed a critical integrative literature review to evaluate research and policy relevant to rural micro-entrepreneurship, with a focus on digital storytelling, Indigenous branding, social enterprise development, and Indigenous empowerment. An integrative approach was selected as it accommodates empirical studies, theoretical and conceptual work, and policy documents, thereby providing a comprehensive understanding of how digital, cultural, and social-enterprise strategies intersect in rural Indigenous contexts. To ensure methodological rigor and contextual relevance, the review primarily drew on Scopus-indexed journal articles published between 2020 and 2025, supplemented by key policy documents such as the *MyDIGITAL Malaysia Digital Economy Blueprint*, the *MADANI Economic Framework*, and the United Nations Sustainable Development Goals (SDGs). Search terms were derived from three conceptual clusters, including “digital storytelling,” “rural entrepreneurship,” “Indigenous branding,” “social enterprise,” “Bidayuh,” and “Sarawak.” Manual reference-list checks and targeted searches of regional journals were conducted to strengthen contextual coverage.

Records were screened against predetermined inclusion criteria: (1) empirical studies, conceptual analyses, or policy reports on digital inclusion or rural/Indigenous entrepreneurship; (2) relevance to at least one domain of the 3D-IMPAK framework (Digital Empowerment, Indigenous Identity & Branding, Peer-Driven Social Enterprise); (3) regional relevance to Southeast Asia or conceptual transferability to Bidayuh contexts; and (4) publication within 2020–2025 or inclusion in current policy reports. From this process, 45 peer-reviewed articles and six policy/grey literature reports were retained for synthesis. Data were extracted systematically, capturing study objectives, key findings, policy recommendations, and metadata (author, year, country, and methodology). Analysis applied a hybrid deductive–inductive coding strategy aligned with the 3D-IMPAK framework. Deductive coding reflected the model’s three domains, while inductive coding identified emergent themes such as digital inclusivity, cultural relevance, market competitiveness, and ecosystem support. Qualitative software was used to manage coding, ensuring transparency and traceability. Findings were integrated through thematic synthesis, highlighting both recurring patterns and critical gaps in the literature. Particular emphasis was placed on policy-relevant insights and the ways in which digital storytelling, cultural branding, and peer networks interact to shape entrepreneurial

outcomes among Indigenous women micro-entrepreneurs. Finally, the review critically appraised the reliability of included sources. Peer-reviewed studies were assessed for methodological rigor, while policy documents were evaluated for transparency and evidentiary grounding. An audit trail of search terms, inclusion decisions, and coding files was maintained to strengthen reliability. Limitations were acknowledged, including reliance on published and grey literature (publication bias), variable methodological quality among studies, and the contextual specificity of some findings. These factors were considered when assessing the transferability of insights to the Bidayuh community in Kampung Singai.

Theoretical Foundation

This review is anchored in multidisciplinary theories that converge on empowerment, literacy, digital inclusion, and the development of rural social enterprises. Kabeer's (1999) theory of empowerment provides a central lens, defining empowerment as the expansion of individuals' capacity to make strategic life choices in contexts where such capacity was previously constrained. Kabeer's framework—comprising resources, agency, and achievements—offers a critical perspective for examining how rural Indigenous micro-entrepreneurs, particularly Bidayuh women and youth, mobilize digital tools, cultural knowledge, and collective networks to strengthen their socio-economic participation. This perspective is enriched by New Literacy Studies (NLS) (Street, 2003), which conceptualizes literacy not as a neutral technical skill but as a social practice embedded in culture, identity, and power relations. Within this framework, digital storytelling functions as more than communication; it becomes a form of cultural authorship through which marginalized entrepreneurs articulate voices, values, and histories. NLS also underlines the integration of culturally rooted digital branding practices within the 3D-IMPAK model, emphasizing the role of narrative, language, and identity in securing meaningful market engagement.

Further, Nicholls' (2009) social enterprise paradigm conceptualizes rural entrepreneurship not solely as economic activity but as mission-driven innovation. Social enterprises in Indigenous contexts serve as vehicles for redistributive justice, community solidarity, and intergenerational knowledge exchange. Nicholls' typology of hybrid organizational forms that balance profit and purpose aligns with the peer-led micro-cooperative approaches embedded in the Kampung Singai case. Complementing these perspectives, the digital inclusion framework (OECD, 2021) stresses that bridging digital divides requires more than infrastructure. Effective participation demands attention to access, skills, usage, and supportive ecosystems. This systemic view highlights the need for both relevant content and culturally appropriate participation pathways for Indigenous women entrepreneurs. Finally, this review incorporates a place-based conception of resilience (Wilson, 2014), which interprets resilience not merely as endurance but as the collective capacity of rural Indigenous communities to adapt, innovate, and preserve identity amid socio-economic and technological transitions. Here, resilience is relational and cultural, arising from storytelling, peer networks, and localized empowerment initiatives.

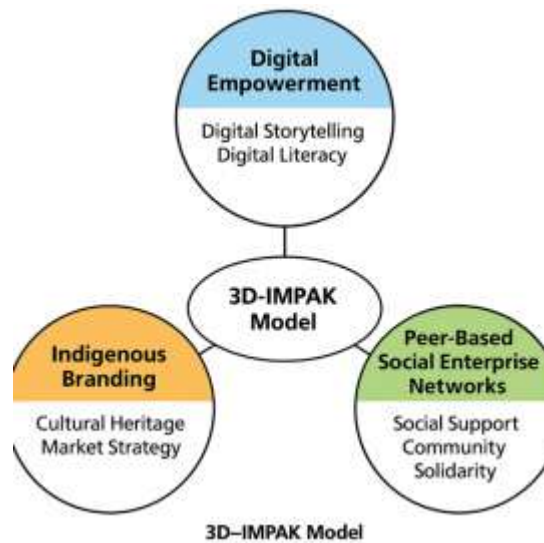


Figure 1. The 3D–IMPAK Model for Rural Indigenous Micro-Entrepreneur Empowerment

This conceptual model illustrates the 3D–IMPAK framework, comprising three interconnected domains: (1) Digital Empowerment, emphasizing digital storytelling and literacy; (2) Indigenous Branding, rooted in cultural heritage and innovative marketing; and (3) Peer-Based Social Enterprise Networks, which foster solidarity, knowledge-sharing, and cooperative growth. Collectively, the model presents a holistic strategy for enhancing competitiveness, resilience, and identity among Bidayuh women entrepreneurs in Kampung Singai and comparable rural Indigenous communities.

Literature Review

Research on rural entrepreneurship and community resilience consistently highlights digital literacy, product competitiveness, and social support as critical pillars of success. These elements align directly with the 3D-IMPAK paradigm, which frames rural development through three interconnected components: Digital Literacy, Product Competitiveness, and Social Enterprise Support. Micro-entrepreneurship plays a central role in rural economies, serving as the second-largest source of employment and an important mechanism for poverty reduction. In Southeast Asia, more than 71 million MSMEs (micro, small, and medium-sized enterprises) account for over 97 percent of registered firms and employ nearly 67 percent of the workforce. Within this context, empowering rural and Indigenous women micro-entrepreneurs through digital tools and narrative techniques has become essential for advancing inclusive development and strengthening community resilience. Digital storytelling enables women entrepreneurs to communicate their cultural identity, enhance product visibility, and expand market reach. Similarly, Indigenous branding and social support networks contribute to competitiveness and sustainability by embedding authenticity, building trust, and encouraging collaborative growth.

This review synthesizes Scopus-indexed publications from 2020 to 2025 across Southeast Asia, focusing on the intersecting themes of digital storytelling, rural entrepreneurship, branding, Indigenous empowerment, and social enterprise. The analysis is structured according to the three dimensions of the 3D-IMPAK framework. Table 1 presents selected scholarly and

practice-based studies published between 2020 and 2025 that correspond to each domain, namely Digital Literacy, Product Competitiveness, and Social Support. Collectively, these studies demonstrate how digital capacity, branding innovation, and socio-cultural empowerment reinforce the sustainability of rural Indigenous women's entrepreneurship.

Digital Literacy and Digital Storytelling in Rural Entrepreneurship

Digital literacy is recognized as a transformative catalyst for rural business, especially in the resource-limited contexts of Southeast Asia. Bai et al. (2023) assert that digital proficiency markedly enhances entrepreneurial success by facilitating access to mobile payments, e-marketplaces, and digital financial services. Simultaneously, Adel et al. (2024) demonstrate that integrating digital competencies with innovations like blockchain fosters financial inclusion and strengthens the resilience of rural MSMEs in Asia and Africa. These research affirm that digital literacy transcends mere technical proficiency; it constitutes a sort of agency that influences entrepreneurial adaptation in swiftly digitalizing economies. Nevertheless, this potential is not universally actualized. Multiple studies underscore enduring disparities in digital competencies among rural entrepreneurs in Malaysia and the surrounding region. Ismail et al. (2023) and Morris et al. (2022) indicate that infrastructure deficiencies, including unreliable internet connectivity and insufficient access to high-quality digital devices, hinder rural MSMEs from effectively employing technologies such as e-wallets, inventory applications, or social media platforms. The issue is exacerbated by a deficiency in confidence or familiarity with ICT, resulting in limited participation in digital training (Ismail et al., 2023). Parthiban et al. (2024) contend that, despite the existence of digital upskilling programs, many are inadequately contextualized, excessively generic, or devoid of post-training assistance, resulting in an inability to effectuate enduring behavioral change.

Digital literacy significantly impacts the cognitive and creative abilities of entrepreneurs. Zhao (2023) asserts that digitally literate businesses are more inclined to engage in digital storytelling and content production, fostering emotional connections with clients through social media platforms. Hussein and Baharun (2021) substantiate the connection between digital literacy and enhanced entrepreneurial self-efficacy and inventiveness among women entrepreneurs in rural Malaysia. Soluk et al. (2021) assert that digital technologies can assist rural entrepreneurs in transcending survivalist business patterns, contingent upon context-sensitive and locally driven implementation. However, Parthiban et al. (2024) and Ismail et al. (2023) warn that these advantages are predominantly found in well-endowed areas or among entrepreneurs already familiar with ICT. In underprivileged or Indigenous groups, adoption is inconsistent due to insufficient culturally relevant training, mentorship, and infrastructure. This highlights the significance of digital storytelling not only as a marketing strategy but also as a means of cultural expression and economic positioning. Nair (2021) illustrates how narrative enhances learner empowerment in digital education, a concept applicable to business. Wake (2012) demonstrates that rural students utilizing digital narratives affirm their identities and life experiences, tactics that could improve branding in rural enterprises. Lowery (2020) contends that place-based storytelling provides distinct distinctiveness in oversaturated markets.

A significant study gap persists: the strategic application of digital storytelling as an entrepreneurial instrument for branding and market penetration among Indigenous rural entrepreneurs is little examined. Keling et al. (2022) demonstrate that storytelling within a cultural framework improves product-market alignment and identification among Dayak women in Sarawak; yet, these methodologies are seldom integrated into rural development plans. The literature delineates three enduring challenges: (1) digital literacy frequently

encompasses only functional skills, neglecting branding and storytelling; (2) when storytelling is employed, it rarely aligns with entrepreneurial objectives or market positioning; and (3) supportive ecosystems, such as peer networks and mentoring, are deficient, resulting in entrepreneurs' isolation (Parthiban et al., 2024; Soluk et al., 2021). The problems are particularly pertinent to the Bidayuh community of Kampung Singai, where micro-entrepreneurs often engage in hybrid enterprises (e.g., homestays, handicrafts, agriculture) while remaining digitally isolated and commercially marginalized (Fang et al., 2022). Keling et al. (2022) observe that limited government initiatives directly assist Indigenous communities such as the Bidayuh with comprehensive entrepreneurial and technology training. The 3D-IMPAK paradigm addresses this deficiency by integrating digital skill enhancement, culturally rooted narratives, and peer network assistance. This corresponds with essential Sustainable Development Goals, namely SDG 1 (No Poverty), SDG 8 (Decent Work), SDG 9 (Industry & Innovation), and SDG 10 (Reduced Inequality), providing a framework for inclusive and culturally respectful business in rural Malaysia.

Enhancing Product Competitiveness through Branding and Innovation

Branding is widely recognized as a vital strategic tool for rural micro-enterprises aiming to enhance product competitiveness in resource-limited settings. Ahmad and Ariffin (2021) assert that branding enables micro-entrepreneurs to create identity, indicate product quality, and foster consumer trust—essential components for operating in saturated or value-oriented marketplaces. Their research on rural Malaysian enterprises illustrates that, even in the absence of substantial promotional expenditures, branded items continuously attract greater consumer attention and command higher price premiums than unbranded counterparts. Che Omar et al. (2023) contend that branding components, including packaging, narrative, and logo design, substantially affect consumer value perception and enduring loyalty, especially in low-income and rural settings. Nonetheless, branding strategies among rural micro-entrepreneurs frequently remain disjointed and inadequately developed. Han, Awang, and Idris (2020) note that numerous rural producers depend on generic packaging and exhibit minimal understanding of how to synchronize branding with cultural identity or consumer preferences. This imbalance diminishes competitiveness, especially when products are launched in urban or overseas markets that prioritize authenticity and emotive narratives. In addressing this deficiency, Han et al. (2020) present the notion of “ethno-branding”, a culturally rooted branding strategy that integrates Indigenous symbols, narratives, and motifs to enhance product uniqueness and market attractiveness. This method has demonstrated notable potential in craft and tourism sectors, where cultural significance amplifies product distinction.

In addition to branding, product innovation is a vital factor influencing competitiveness in rural entrepreneurship. Nguyen and Nguyen (2021) observe that rural businesses often partake in incremental innovation, such as environmentally sustainable packaging, product reuse, or local design modification, that improves usability, aesthetic appeal, and consumer happiness. Liao and Wang (2023) assert that low-cost, user-informed innovations enhance consumer evaluations and encourage repeat purchases. Nonetheless, obstacles persist substantially. Ismail et al. (2023) indicate that the majority of rural entrepreneurs are deprived of access to innovation ecosystems, encompassing design thinking tools, collaborative environments, and mentorship initiatives that facilitate research and development endeavors. Moreover, innovative initiatives lacking cultural foundations may undermine traditional knowledge and estrange community members. Yusoff, Mustapha, and Khalid (2022) emphasize that numerous women-led micro-enterprises innovate out of necessity but lack structural support for growing or sustaining their innovations, especially in East Malaysia.

Recent study increasingly underscores the importance of merging branding and innovation into a unified strategy rather than considering them as distinct endeavors. Wu et al. (2022) promote "brand-led innovation," wherein product development is directly connected to brand identity and consumer narratives. In rural micro-enterprises, this may involve creating new product lines infused with cultural motifs or employing digital tools (e.g., QR codes) to connect consumers with origin narratives. Soluk et al. (2021) assert that these tactics cultivate enhanced emotional bonds with consumers and facilitate competitive advantage via distinctiveness. Hossain et al. (2021) warn that the efficacy of this branding-innovation synergy relies on the existence of supportive ecosystems, networks that enable creative experimentation, access to design tools, and collaborative learning. In their absence, numerous rural enterprises function independently, resulting in fragmented branding, poor market alignment, and inefficient resource utilization. These observations are particularly relevant to Bidayuh micro-entrepreneurs in Kampung Singai. Notwithstanding the substantial cultural wealth represented in their products, spanning bamboo crafts to heritage-based homestays, branding and innovation initiatives are inconsistent, fragmented, and lack institutional support. The 3D-IMPAK approach fills this void by introducing a cohesive platform that synchronizes cultural branding with product innovation via community-driven capacity-building and peer support networks. This methodology promotes competitiveness while ensuring that innovation and branding strategies are culturally grounded and economically sustainable, thereby promoting market objectives and identity preservation.

In Indigenous communities like the Bidayuh of Kampung Singai, branding and innovation serve as instruments for cultural affirmation and inclusive economic engagement, rather than solely as commercial initiatives. A significant number of Bidayuh micro-entrepreneurs participate in artisanal crafts, homestays, and agrotourism—industries abundant in history yet underutilized in official markets (Fang et al., 2022). Keling et al. (2022) contend that the lack of culturally relevant branding and innovation frameworks perpetuates the marginalization of Indigenous entrepreneurs from national and global economic agendas. This review introduces the 3D-IMPAK methodology, which effectively bridges this gap by combining digital storytelling, branding facilitation, and peer-driven innovation platforms. It empowers entrepreneurs to convert Indigenous identity into engaging brand narratives, collaboratively develop products via community-driven innovation laboratories, and enhance market access through social networking. This ecosystem-based concept promotes a transition from individual entrepreneurship to community-oriented economic resilience, closely correlating with SDG 8 (Decent Work), SDG 9 (Industry, Innovation and Infrastructure), and SDG 10 (Reduced Inequalities). The third pillar of the 3D-IMPAK model is Social Support includes the supportive environment that maintains rural micro-entrepreneurs. This encompasses community solidarity, leadership, governmental institutions, non-governmental organizations, and notably, social enterprises. Recent literature (2020–2025) highlights the pivotal significance of these support structures in fostering entrepreneurship within Indigenous and rural communities. Social enterprises function as mediators that integrate commercial goals with social effect. Parthiban et al. (2024) illustrate a situation in India where an ICT-enabled social enterprise addressed knowledge deficiencies using a four-phase strategy: foundational training, intra-community knowledge transfer, external market linkage, and blended online-offline engagement. This method, known as "technofication," revealed that when digital tools are culturally contextualized and integrated into social networks, they markedly enhance product-market alignment and entrepreneurial success. The approach affirmed Indigenous knowledge while enhancing digital competence, resulting in elevated income, resilience, and community agency with minimal financial investment.

In addition to formal firms, community-driven initiatives and grassroots leadership have been crucial in fostering rural entrepreneurial resilience. Velázquez (2020) illustrates that Indigenous social companies in Latin America often arise as communal reactions to social and economic upheavals, driven not by profit maximization but by the preservation of dignity, cultural continuity, and environmental sustainability. These firms prioritize communal welfare over profit, exemplifying an alternative development paradigm in which entrepreneurship serves as a means of self-determination. In Southeast Asia, community-based support mechanisms, such as cooperatives, microfinance initiatives, and mentorship programs, have demonstrated efficacy in promoting inclusivity in rural entrepreneurship (Yusoff et al., 2022; Soluk et al., 2021). Government and NGO-supported programs that provide training, funding, infrastructure, and access to new markets are essential in alleviating structural disparities encountered by Indigenous entrepreneurs. The Tanoti social enterprise in East Malaysia has assisted over 500 craftspeople across 25 villages in Sarawak since its establishment in 2012. Originally established to save traditional weaving among Borneo’s Indigenous women, Tanoti has transformed into a comprehensive social enterprise, including branding, quality assurance, narrative development, and access to international markets. It functions as a cultural protector and economic facilitator, illustrating how community-focused and culturally congruent social support may rejuvenate Indigenous businesses. Tanoti’s success narrative exemplifies the literature's persistent conclusions: social businesses can enhance livelihoods, mitigate urban migration, and rejuvenate pride in cultural heritage through organized support and substantive engagement.

In conclusion, boosting rural Indigenous entrepreneurs necessitates a multifaceted approach. Digital literacy and narrative skills facilitate engagement in digital economy and enhance visibility in saturated marketplaces. Innovative and branding strategies enhance competitiveness while preserving cultural values. Social support, whether via social enterprises or grassroots networks, is essential for sustaining entrepreneurial ecosystems. The 3D-IMPAK framework actualizes this synergy by integrating Indigenous identity, technological capability, and communal values into a comprehensive paradigm for rural development. This method signifies a means to economic dignity for communities such as Kampung Singai, while also serving as a paradigm for culturally sensitive and inclusive reform.

Table 1 Summarizes Key Literature (2020–2025) Related to Each Component of This Framework.

Author (Year)	Focus	Key Findings	Relevance to 3D-IMPAK
Widjayanti (2024)	Digital marketing adoption by rural MSMEs (Indonesia, COVID-19 context)	Rural micro-enterprises face socio-technical barriers to digital adoption; identified four adaptation strategies blending online platforms with local business traditions. Introduced the concept of “indigenous digital marketing.”	Digital Literacy: Highlights need for culturally adapted digital skills and strategies for rural entrepreneurs.
Funk (2024)	Digital storytelling for sustainability in Asia	Digital storytelling amplifies marginalized voices and encourages social change. Emphasizes crafting authentic, competency)	Digital Literacy: Demonstrates how storytelling (a digital empowers

Author (Year)	Focus	Key Findings	Relevance to 3D-IMPAK
		culturally resonant narratives and ethical considerations in storytelling.	communities and spreads awareness; underlines inclusive digital content creation.
Kaur et al. (2024)	Impact of digital storytelling on brand image	Found that authentic digital stories create emotional intimacy and trust with consumers, leading to improved brand image and customer loyalty. Storytelling is more effective than overt advertising when building a brand.	Product Competitiveness: Shows that integrating storytelling into branding can enhance product appeal and competitiveness by building trust.
Chua et al. (2025)	Indigenous product innovation in Sarawak (Borneo)	Documented R&D on indigenous foods (e.g., dabai fruit, wild pepper) to create value-added products. Revealed <i>vast untapped economic potential</i> of indigenous resources and stressed strategic product development for sustainability. Some local products gained Geographical Indication status.	Product Competitiveness: Illustrates leveraging local natural/cultural resources to innovate and improve product value, enhancing competitiveness of rural products.
Parthiban et al. (2024)	“Technoficing” model – ICT and social enterprise support in rural India	Social enterprise intervened to connect rural micro-entrepreneurs with markets. Identified knowledge gaps and implemented a four-phase ICT enterprise (basic to offline-training, technology, and online) to mobilize indigenous market linkages – enabling knowledge. Empowering local rural entrepreneurs through institutions with simple tech external support. improved market alignment.	Social Support: Demonstrates the role of an intermediary (social enterprise) in providing training, technology, and integration to enabling market linkages – enabling rural entrepreneurs through simple tech external support.
Velázquez (2020)	Indigenous enterprises and community being (Latin America)	Indigenous-run social enterprises emerged as responses to community crises. They follow local values and prioritize dignity, cultural preservation, and social well-being (Latin America). Showed improved community well-being (e.g., jobs, reduced inequalities) aligned with SDGs as a result. Challenges conventional profit-	Social Support: Highlights grassroots empowerment – local leadership and culturally grounded social enterprises provide community-centric support, leading to resilience and sustainable development.

Author (Year)	Focus	Key Findings	Relevance to 3D-IMPAK
Tanoti case – Top10 Asia (2021)†	Social enterprise Sarawak artisans (Malaysia)	centric models by focusing on humanistic management. Tanoti social enterprise grew from 11 weavers to 500 artisans across rural Sarawak. It provides design training, ensures quality, and connects products to international markets, all while preserving heritage crafts. Achieved significant income improvements for participants.	Social Support & Product Competitiveness: Real-world example of a social enterprise boosting product quality, branding, and market access (competitiveness) and offering ongoing community support.

Table 1

Note: Although not a scholarly study, the Tanoti case (Top 10 of Asia, 2021) is included to illustrate practical impact, complementing the academic insights on social enterprise roles.

Synthesis and Discussion

The literature highlights a clear need for a cohesive framework that integrates digital empowerment, Indigenous branding, and peer-based social support. The proposed 3D-IMPAK model responds to this need by unifying these three elements into a framework designed to empower rural Indigenous women micro-entrepreneurs, particularly within the Bidayuh community of Kampung Singai. Digital empowerment equips women entrepreneurs with the capacity to access tools, information, and digital marketplaces. However, access alone is insufficient without culturally relevant content and purposeful engagement. Indigenous branding plays a complementary role by transforming cultural heritage into strategic assets. Through digital storytelling, traditional crafts, food products, and services are communicated with identity, meaning, and authenticity rather than being presented merely as commodities. The integration of digital platforms and cultural branding expands market reach while enhancing the visibility and recognition of marginalized communities. Peer-based social enterprise networks serve as the foundation that sustains both digital empowerment and cultural branding. These networks facilitate knowledge exchange, provide emotional support, and foster collaborative resilience. Rural women entrepreneurs often experience isolation, but when connected through cooperatives or mentorship structures, they benefit from shared branding platforms, collective purchasing, and collaborative storytelling initiatives. Evidence indicates that community-anchored systems are more sustainable than individual-centric approaches, especially in Indigenous contexts. The interplay of the three domains demonstrates a mutually reinforcing cycle. Branding is ineffective without digital platforms, digital technologies are underutilized without authentic cultural content, and both require a supportive social infrastructure to scale and endure. While the literature affirms these interconnections, few studies conceptualize them as a cohesive model. This gap is particularly evident in East Malaysia and Borneo, where digital training, entrepreneurship, and cultural preservation are often treated as separate policy domains.

A distinct regional and epistemological disparity also persists. Research on rural entrepreneurship in Malaysia disproportionately emphasizes Peninsular regions, while East Malaysia, home to communities such as the Bidayuh, Iban, and Orang Ulu, remains underrepresented in both empirical studies and policy frameworks (Tan et al., 2022; Keling et al., 2022). Few studies incorporate Indigenous knowledge systems, values, or governance structures into entrepreneurship models. This exclusion risks perpetuating uniform top-down approaches that lack cultural relevance and community support. By contrast, the 3D-IMPAK model offers a systematic yet adaptable framework grounded in the Bidayuh experience but flexible enough to be tailored to other contexts. For example, Orang Asli communities in Peninsular Malaysia might adapt digital storytelling to themes of ecological stewardship, while coastal Bajau Laut communities could link peer networks to marine-based cooperatives. In conclusion, the 3D-IMPAK model addresses a significant gap in both theory and practice by providing a culturally embedded, community-driven approach to rural entrepreneurship. It connects fragmented domains in the literature and underscores relational, contextual, and inclusive pathways to empowerment and resilience. The model demonstrates that strengthening Indigenous women micro-entrepreneurs through digital empowerment, cultural branding, and peer collaboration is essential to building sustainable livelihoods and advancing equitable rural transformation.

Policy Implications and Recommendations

This research demonstrates that empowering rural Indigenous women micro-entrepreneurs, as illustrated by the Bidayuh community in Kampung Singai, requires an integrated, culturally grounded, and community-centric approach such as the 3D-IMPAK model. Several policy implications and practical recommendations emerge for primary stakeholders.

Enhancing Location-Specific Initiatives: The Role of KEDA, STIDC, and DBNA

Regional development agencies such as the Kedah Regional Development Authority (KEDA) and the Sarawak Timber Industry Development Corporation (STIDC) should move beyond episodic training and instead develop sustained, place-based interventions that support branding, innovation, and digital narrative development. Collaboration with cultural organizations such as the Dayak Bidayuh National Association (DBNA) is essential in formulating branding strategies that integrate local languages, heritage themes, and community narratives. Cultural branding must be recognized not as a peripheral activity but as a fundamental driver of product competitiveness, especially in niche tourism and heritage-linked sectors.

Inclusive Financing and Capacity Development: Expanding TEKUN and Microfinance Roles

Institutions such as TEKUN Nasional should enhance their financial services by incorporating branding mentorship, digital marketing support, and post-loan advisory programs. Many rural women entrepreneurs lack the confidence and skills to optimize financing for business scaling. TEKUN and similar organizations should establish Social Enterprise Incubators in rural Sarawak, targeting B40 Indigenous women and youth. Financing structures should emphasize cooperative outcomes and long-term resilience rather than short-term individual profit.

Bridging National Policy Frameworks with Local Realities: MADANI and MyDIGITAL

The 3D-IMPAK model aligns closely with the MADANI Economy and the MyDIGITAL Blueprint 2021–2030, which emphasize inclusive growth and digital empowerment. However, a significant disconnect remains between these policies and realities in rural Sarawak. For

instance, MyDIGITAL reports indicate that fewer than 50 percent of rural SMEs have adopted digital tools, with Sarawak trailing due to infrastructure limitations and the absence of localized support (EPU, 2021). Community perspectives also suggest that many initiatives are overly generic and urban-centric. Policymakers should allocate targeted resources to community-driven projects such as digital storytelling, Indigenous branding, and peer-based enterprise development, ensuring that policies reach women entrepreneurs in Indigenous communities.

Universities as Catalysts for Community Transformation

Universities, particularly public institutions in East Malaysia, play a vital role as knowledge interpreters, design facilitators, and evaluators. Academic researchers should co-develop toolkits, conduct impact assessments, and deliver digital training modules tailored to Indigenous women entrepreneurs. Frameworks such as 3D-IMPAK can be embedded in service-learning initiatives, research funding, and graduate entrepreneurial pathways. Universities should also act as neutral platforms to convene government officials, NGOs, and community leaders, thereby fostering participatory governance in rural entrepreneurship.

In conclusion, implementing these insights requires a multi-stakeholder ecosystem that moves beyond purely technical solutions. Policies must adopt culturally responsive, digitally inclusive, and socially integrated strategies. The 3D-IMPAK model offers a scalable and adaptable framework to guide this transformation, ensuring that Indigenous women entrepreneurs can achieve greater resilience, competitiveness, and dignity in the digital economy.

Conclusion

This critical review has highlighted the persistent and interconnected challenges faced by rural Indigenous women micro-entrepreneurs, particularly within the Bidayuh community of Kampung Singai. These challenges include digital exclusion, limited branding capacity, restricted market access, and fragmented support systems. Although national policy frameworks such as the MADANI Economy and the MyDIGITAL Blueprint articulate progressive visions for inclusive development, their translation into effective grassroots implementation remains uneven, especially in East Malaysia. The study proposes the 3D-IMPAK paradigm as a contextualized framework to bridge these structural gaps. By integrating Digital Empowerment, Indigenous Branding, and Peer-Based Social Enterprise Networks, the model reconceptualizes rural entrepreneurship as more than an economic activity. It emphasizes resilience, cultural identity, and collective agency, embedding infrastructure access with culturally relevant content and community solidarity. Developed from the experiences of the Bidayuh community in Kampung Singai, the framework demonstrates scalability for other Indigenous and rural communities in Malaysia and Southeast Asia, provided that local values, capacities, and needs are incorporated into its implementation. Its adaptability is rooted in its human-centered orientation, which balances policy aspirations with lived realities.

Future research should employ longitudinal approaches to examine the sustained impact of integrated strategies such as 3D-IMPAK. Comparative studies between Peninsular and East Malaysian communities may reveal nuanced socio-cultural dynamics, while participatory action research (PAR) that actively involves community members in the co-design and co-leadership of initiatives will be crucial for fostering trust, ownership, and lasting outcomes. In conclusion, advancing the transformative potential of rural entrepreneurship requires an integrated strategy that addresses digital, cultural, and social dimensions. The 3D-IMPAK model provides a timely, locally grounded, and scalable approach to promoting equitable,

inclusive, and sustainable rural development, with particular relevance for empowering Indigenous women entrepreneurs.

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