

Empowering Bumiputera SMEs Through Human-Centric Digital Transformation: Evidence and Research Directions

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DOI: <https://dx.doi.org/10.47772/IJRISS.2025.910000531>

Received: 02 November 2025; Accepted: 08 November 2025; Published: 18 November 2025

ABSTRACT

This study addresses a critical gap in the literature: despite the pivotal role of Bumiputera SMEs in Malaysia's economic inclusivity agenda, there is limited systematic understanding of how human-centric digital transformation can empower these enterprises. Prevailing digital initiatives often prioritize technology over people, overlooking the unique socio-cultural, human capital, and organizational challenges faced by Bumiputera entrepreneurs. To address this, the study aims to analyze the research landscape on human-centric digital transformation in Bumiputera SMEs by mapping key themes, identifying intellectual structures, and proposing future research directions. Using Scopus AI (as of 25 September 2025), the research employed an advanced bibliometric and semantic analysis based on a targeted search string encompassing Bumiputera identity, SMEs, digital transformation, human-centricity, and empowerment. The analysis generated a Summary, Expanded Summary, Concept Map, Topic Experts profile, and Emerging Themes. Findings reveal that while digital transformation frameworks, organizational agility, and even novel technologies like digital twins are gaining traction globally, research explicitly focused on Bumiputera SMEs remains virtually absent. Instead, empowerment is mediated by human capital particularly digital literacy, innovation culture, and leadership capabilities and enhanced through culturally resonant strategies such as narrative-driven digital storytelling. The study contributes a novel integrative framework that positions human agency at the core of digital transformation. Practically, it urges policymakers and support agencies to co-design context-sensitive interventions that blend digital upskilling with cultural identity, community engagement, and agile management practices. Theoretically, it bridges ethnic entrepreneurship, inclusive innovation, and digital sociology. The paper concludes with a call for primary research, action-based pilots, and longitudinal studies to ground digital empowerment strategies in the lived realities of Bumiputera entrepreneurs.

Keywords— Human-Centric Digital Transformation, Bumiputera SMEs, Digital Empowerment, Human Capital Development and Inclusive Digital Economy

INTRODUCTION

Small and medium-sized enterprises (SMEs) are widely recognized as the backbone of national economies,

contributing significantly to employment generation, innovation, and inclusive growth (Koca & van Deursen, 2025). In Malaysia, Bumiputera SMEs play a particularly vital role in advancing socio-economic development, reducing inequality, and fostering entrepreneurship among the majority population. However, in an era increasingly shaped by digital technologies, SMEs are confronted with the pressing need to undergo digital transformation to remain competitive, resilient, and sustainable. Beyond the mere adoption of technology, digital transformation has been conceptualized as a human-centric process, requiring a balance between technological investments and the enhancement of human capabilities, leadership competencies, and community engagement (Destrian & Sudarma, 2024a; Costa Melo et al., 2023).

Although digital transformation offers unprecedented opportunities, the transition for Bumiputera SMEs is not without challenges. Many enterprises face structural limitations, including insufficient digital literacy among leaders, resource constraints, and uneven access to enabling infrastructures. Leadership capacity, particularly in terms of digital literacy, has emerged as a decisive factor in shaping the extent to which SMEs can leverage digital tools effectively, with demographic factors such as age, education, and gender further influencing outcomes (Destrian & Sudarma, 2024a, 2024b). Moreover, the multidimensional nature of digital transformation highlights the role of the Technology-Organization-Environment (TOE) framework, which emphasizes that organizational resources, technological capabilities, and external pressures jointly shape adoption trajectories (Phiet, 2024).

Prior studies have examined these dynamics across different contexts. For instance, in Indonesia, digital entrepreneurial marketing was found to significantly enhance performance in food and beverage SMEs, though resource limitations hindered full adoption (Nurbasari et al., 2026). Similarly, in Vietnam, digital supply chain transformation became critical for crisis response and resilience during the COVID-19 pandemic (Ngo et al., 2023). In other cases, digital transformation initiatives aligned with human-centered design (HCD) and community-driven approaches have fostered sustainable models of innovation, such as in local cultural promotion (Somthawinpongsai et al., 2025) and sanitation marketing (Riggs & Kaanadka, 2015). Despite these insights, the Malaysian Bumiputera SME context remains underexplored, particularly in terms of how human-centric digital transformation can empower these enterprises while ensuring inclusivity and sustainability.

This gap underscores the need for a comprehensive review that not only synthesizes existing knowledge but also identifies emerging directions tailored to the Bumiputera SME ecosystem. While previous studies have illuminated leadership digital literacy (Destrian & Sudarma, 2024a, 2024b), sectoral strategies (Nurbasari et al., 2026), and resilience in crisis contexts (Alam et al., 2022), few have holistically mapped the intersection of these elements within the unique socio-cultural and economic realities of Bumiputera enterprises.

Accordingly, this paper aims to analyze the research area of human-centric digital transformation in Bumiputera SMEs in Malaysia by employing Scopus AI-based bibliometric tools. Specifically, the study develops a concept map to visualize intellectual structures, highlights topic experts shaping the field, and identifies emerging themes that can guide future research and practice. By doing so, this study contributes to both scholarship and policy by offering evidence-based insights that can support more inclusive, resilient, and human-centered approaches to digital transformation.

The remainder of the paper is organized as follows. Section 2 outlines the methodology adopted for data collection using Scopus AI. Section 3 presents the findings, including the conceptual mapping, expert clusters, and thematic structures. Section 4 discusses key insights and research gaps, with implications for both scholars and practitioners. Finally, Section 5 concludes the paper by suggesting future research avenues and policy recommendations for empowering Bumiputera SMEs through human-centric digital transformation.

METHODOLOGY

This study employs a systematic literature review guided by Scopus AI a next-generation research intelligence platform launched by Elsevier to analyze the research landscape on human-centric digital transformation in Bumiputera SMEs in Malaysia. The analysis was conducted using Scopus AI as of 25 September 2025, leveraging its advanced natural language processing and bibliometric capabilities to generate a Summary, Expanded Summary, Concept Map, Topic Experts, and Emerging Themes (Refer to Figure 1). These features

enable a granular understanding of thematic evolution, intellectual structure, and knowledge gaps within a specified domain (Elsevier, 2025). To ensure relevance and precision, a comprehensive Boolean search string was constructed and executed within Scopus AI:

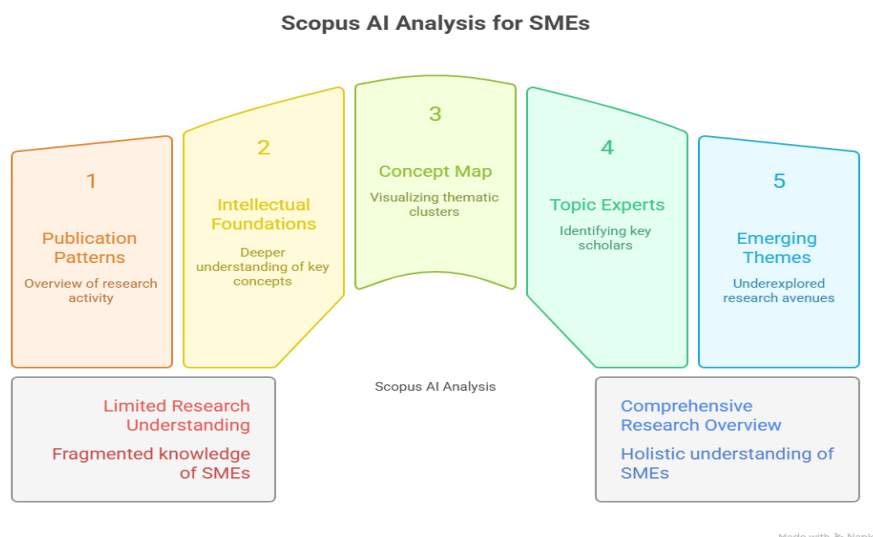
("Bumiputera" OR "indigenous" OR "ethnic" OR "local") AND ("SME" OR "small business" OR "entrepreneur" OR "startup") AND ("digital transformation" OR "digitalization" OR "technology adoption" OR "innovation") AND ("human-centric" OR "user-centered" OR "people-focused" OR "customer-oriented") AND ("empowerment" OR "capacity building" OR "development" OR "support"). This multi-layered query was designed to capture interdisciplinary studies that intersect socio-cultural identity, SME dynamics, digital innovation, human-centered design principles, and developmental outcomes—core dimensions of the research aim.

The Summary function of Scopus AI provided an initial snapshot of publication trends, geographic distribution, and key journals, revealing a notable scarcity of studies explicitly addressing Bumiputera SMEs, despite growing attention to digital transformation in Southeast Asian contexts (e.g., Destrian & Sudarma, 2024; Phiet, 2024). The Expanded Summary then synthesized core findings from top-cited and recent publications, highlighting recurring themes such as leadership digital literacy (Destrian & Sudarma, 2024), sector-specific digital strategies (Nurbasari et al., 2026), and the role of crisis resilience (Ngo et al., 2023).

To visualize conceptual relationships, Scopus AI generated a Concept Map based on co-occurrence of keywords and semantic clustering. This map identified central nodes including “digital literacy,” “inclusive innovation,” “TOE framework,” and “community-based design” and revealed weak linkages between “Bumiputera” and “human-centric digital transformation,” confirming a critical research void. The Topic Experts module ranked authors and institutions by influence, citation impact, and thematic relevance, identifying scholars such as Destrian (Indonesia), Alam (Australia/Malaysia nexus), and Somthawinpongsai (Thailand) as key contributors to adjacent domains, though none focused explicitly on Malaysian Bumiputera enterprises.

Finally, the Emerging Themes feature used temporal trend analysis and machine learning to detect nascent topics gaining scholarly traction. These included “gender-inclusive digital policies” (Alam et al., 2022), “sustainability-integrated digital transformation” (Costa Melo et al., 2023), and “narrative-driven community platforms” (Somthawinpongsai et al., 2025) all of which hold high transferability potential for Bumiputera contexts but remain underexplored. By integrating these five analytical dimensions, this methodology not only maps the current state of knowledge but also strategically identifies actionable pathways to empower Bumiputera SMEs through human-centric digital transformation.

Figure 1: 5 core elements of Scopus AI



RESULTS AND DISCUSSION

The analysis powered by Scopus AI (as of 25 September 2025) reveals a fragmented yet evolving scholarly landscape at the intersection of human-centric digital transformation and indigenous entrepreneurship, with significant implications for Bumiputera SMEs in Malaysia. Drawing on four complementary analytical dimensions Summary & Expanded Summary, Concept Map, Topic Experts, and Emerging Themes this section synthesizes key patterns, intellectual gaps, and forward-looking insights that collectively inform both theoretical understanding and policy action.

Insights from the Summary and Expanded Summary

The Summary and Expanded Summary generated by Scopus AI (as of 25 September 2025) offer a best understanding of the current state of knowledge on human-centric digital transformation, particularly as it pertains to Bumiputera SMEs in Malaysia. Collectively, these analytical outputs reveal that while digital transformation is increasingly recognized as a strategic imperative for SMEs globally, its successful implementation in Bumiputera contexts is hindered by persistent human and organizational constraints rather than purely technological deficits. Specifically, the Expanded Summary identifies limited skilled workers, lack of creativity, and insufficient digital knowledge as the primary barriers to adoption among Bumiputera SMEs (Hanifah, Halim, Ahmad, & Vafaei-Zadeh, 2017, 2019). These findings align with broader literature emphasizing that digital transformation is not merely a technical upgrade but a socio-organizational process requiring complementary investments in human capital and innovation culture (Seppänen, Ukko, & Saunila, 2025).

Crucially, the Expanded Summary underscores that effective human-centric digital transformation hinges on enhancing workforce digital literacy, fostering innovation-friendly organizational cultures, and bridging the gap between policy rhetoric and on-the-ground digital tool adoption (Seppänen et al., 2025). This resonates with evidence from neighboring Southeast Asian contexts: for instance, Nugroho et al. (2025) demonstrate that digital literacy training in rural Indonesian MSMEs significantly improves capabilities in online marketing, networking, and e-commerce, leading to expanded market access and stronger community collaboration. Similarly, in traditional Minangkabau SMEs, the integration of digital tools with cultural heritage has enhanced product visibility and consumer trust, illustrating how technology can amplify—rather than erode—local identity when implemented through a human-centered lens (Putri, Sekarningrum, Azwar, & Muftiadi, 2025).

The potential benefits of overcoming these barriers are substantial. Empowering Bumiputera SMEs through human-centric approaches is linked to increased operational efficiency, productivity, profitability, and innovation performance (Hanifah et al., 2017, 2019). These outcomes are not automatic but contingent on the strategic deployment of enabling technologies—such as Software as a Service (SaaS), Marketing Technology (MarTech), Customer Relationship Management (CRM), and Enterprise Resource Planning (ERP) systems—that are tailored to SMEs' scale and sectoral needs (Phiet, 2024). However, as Phiet's (2024) study in Vietnam illustrates, even when such tools are available, their adoption is mediated by organizational readiness and environmental support structures, reinforcing the relevance of the Technology–Organization–Environment (TOE) framework in Bumiputera contexts.

Notably, the Summary reveals a critical disconnect: while Malaysia has robust policy frameworks aimed at Bumiputera economic empowerment (e.g., through agencies like MARA and SME Corp), the scholarly literature lacks empirical studies that evaluate how these initiatives translate into measurable digital capabilities at the enterprise level. Most cited works focus on Indonesia, Vietnam, or general SME populations, leaving Bumiputera-specific dynamics underexplored. This gap is particularly concerning given that Bumiputera SMEs often operate in culturally embedded sectors such as halal food, handicrafts, and community-based tourism where digital solutions must be co-designed with local values and social structures in mind (Putri et al., 2025; Somthawinpongsai et al., 2025).

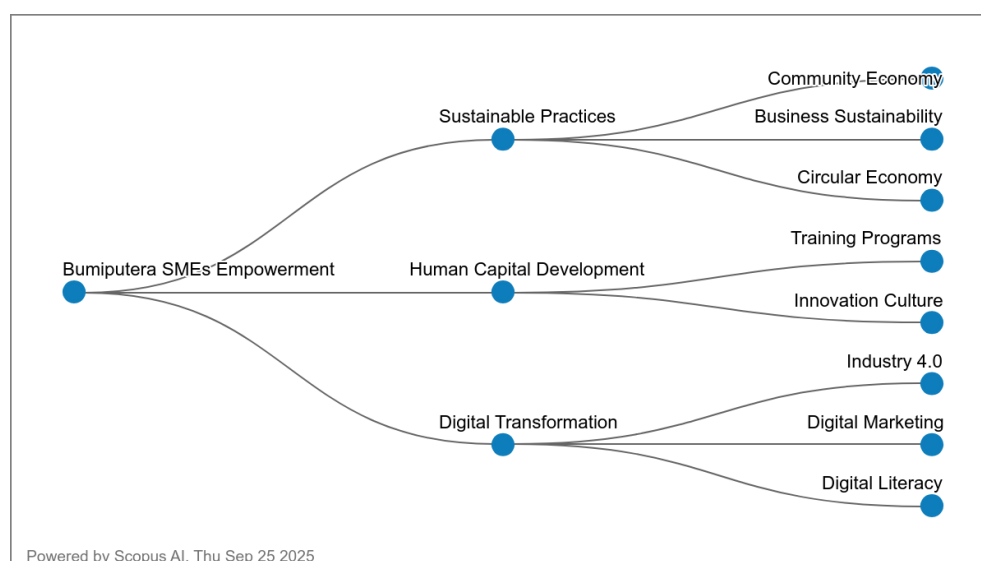
In sum, the Summary and Expanded Summary collectively affirm that technology alone cannot empower Bumiputera SMEs; rather, digital transformation must be reoriented around people—leaders, employees, customers, and communities. The path forward requires integrated strategies that combine digital upskilling,

culturally attuned innovation ecosystems, and institutional support that moves beyond infrastructure provision to address cognitive and organizational readiness. Without such a human-centric pivot, digital initiatives risk exacerbating existing inequalities rather than fostering inclusive growth.

Concept Map

The concept map presented in Figure 2 below illustrate the core thematic architecture surrounding Bumiputera SMEs' Empowerment through human-centric digital transformation. Rather than depicting isolated variables, this map illustrates a dynamic, multi-pathway framework in which empowerment emerges from the strategic convergence of three interrelated pillars: Sustainable Practices, Human Capital Development, and Digital Transformation.

Figure 2: Concept map of Bumiputera SMEs' Empowerment through human-centric digital transformation



A review of Bumiputera SMEs Empowerment

Empowering Bumiputera SMEs in Malaysia remains a critical yet complex policy and developmental challenge. Empirical studies consistently identify limited skilled workers, insufficient creativity, and knowledge gaps as fundamental barriers constraining their innovation capacity and digital readiness (Hanifah, Halim, Ahmad, & Vafaei-Zadeh, 2017, 2019). These constraints are not merely technical but deeply rooted in human capital deficiencies that hinder the adoption of digital tools and innovative business practices. In a digital economy where agility and continuous learning are paramount, the absence of a skilled, adaptive workforce significantly limits Bumiputera SMEs' ability to compete, scale, or respond to market disruptions. This underscores the need to reframe empowerment not as a matter of financial aid or preferential access alone, but as a process of building endogenous capabilities grounded in people.

Central to this capability-building is the role of specific human capital defined as firm-specific knowledge, skills, and competencies that drive innovation. Research by Hanifah et al. (2017, 2019) demonstrates that attributes such as creativity, innovativeness, and proactiveness are strong predictors of innovation performance among Bumiputera SMEs. However, these traits do not emerge in isolation; they are cultivated within an innovation-supportive organizational culture that encourages experimentation, learning from failure, and open communication. Human-centric digital transformation aligns precisely with this logic: it prioritizes upskilling leaders and employees, fostering digital mindsets, and embedding technology in ways that enhance not replace human agency. For instance, digital literacy programs that go beyond tool training to include design thinking or customer empathy can catalyze the very innovativeness that Bumiputera firms currently lack.

Despite decades of affirmative action policies aimed at reducing ethnic economic disparities, the ineffectiveness of horizontal inequality policies in genuinely empowering Bumiputera entrepreneurship remains a persistent critique (Gomez, 2012). Traditional approaches have often focused on ownership quotas, capital injections, or regulatory protections without adequately addressing the underlying deficits in

management quality, market orientation, or digital fluency. As Gomez (2012) argues, such policies risk creating dependency rather than sustainable enterprise capability. A human-centric digital transformation strategy offers a corrective by shifting the focus from who owns the business to how the business learns, adapts, and creates value. This paradigm aligns empowerment with performance, inclusion with competitiveness, and equity with innovation.

Notably, while the existing literature identifies challenges and enablers, none of the reviewed studies propose concrete, scalable strategies specifically designed for Bumiputera SMEs' digital empowerment. This represents a significant research gap. However, insights from adjacent domains suggest that effective interventions must be co-created with Bumiputera entrepreneurs, leveraging community networks, cultural values (e.g., collectivism, trust in local institutions), and sector-specific needs (e.g., halal food, handicrafts, rural tourism). For example, integrating digital marketing training with storytelling techniques rooted in Malay heritage could enhance both market reach and cultural authenticity a dual benefit that purely technical programs overlook.

In conclusion, empowering Bumiputera SMEs through human-centric digital transformation requires a systemic shift: from policy-driven entitlement to capability-driven enablement. It demands investments not only in broadband or software but in people, culture, and context-sensitive innovation ecosystems. Future research and policy must prioritize longitudinal studies on digital upskilling outcomes, evaluate the impact of human-centered design in Bumiputera business support programs, and explore how digital platforms can amplify not dilute indigenous entrepreneurial identity. Only then can digital transformation become a genuine vehicle for inclusive and sustainable Bumiputera economic advancement.

The Relationship Between Bumiputera SMEs Empowerment and Sustainable Practices

The empowerment of Bumiputera SMEs in Malaysia is increasingly intertwined with the adoption of sustainable practices, which are critical for ensuring long-term competitiveness and resilience. Empowerment, in this context, goes beyond financial assistance and policy-driven support, encompassing the ability of SMEs to innovate, adapt, and align business strategies with sustainability imperatives. Sustainable practices such as resource efficiency, waste reduction, and environmentally conscious operations are no longer optional but have become essential drivers of global market competitiveness (Costa Melo et al., 2023). For Bumiputera SMEs, adopting sustainability is not only a pathway to growth but also a means of contributing to Malaysia's broader sustainable development agenda.

One of the key dimensions linking empowerment and sustainability lies in the integration of business sustainability into SME operations. Business sustainability encourages SMEs to balance economic performance with social and environmental responsibilities, creating value for stakeholders while ensuring survival in competitive markets (Seppänen et al., 2025). For Bumiputera SMEs, this requires building internal capacities to implement sustainable strategies such as eco-innovation, green product development, and energy-efficient production. However, limited human capital and creativity long-standing challenges for Bumiputera enterprises can constrain the effective integration of such practices (Hanifah et al., 2017, 2019). Thus, empowerment initiatives must target skill development and capacity building as enablers of sustainability adoption.

Another critical link is the role of community economy and circular economy models in enhancing empowerment. Community-based economic approaches emphasize collective growth, local resource utilization, and cultural preservation, which resonate strongly with Bumiputera SMEs rooted in traditional industries. Similarly, circular economy practices such as recycling, reusing, and minimizing waste align with global sustainability standards while offering cost advantages and innovation opportunities (Somthawinpongsai et al., 2025). Empowerment through these models enables SMEs to not only remain economically viable but also foster social inclusivity and environmental stewardship within their communities.

Innovation culture further strengthens the relationship between empowerment and sustainable practices. Evidence suggests that SMEs with a strong innovation culture are better positioned to embed sustainability into their operations by developing creative solutions and adapting to evolving market demands (Hanifah et al., 2017, 2019). For Bumiputera SMEs, cultivating such a culture requires targeted training programs,

government-supported incentives, and collaboration with industry experts to overcome structural disadvantages. By fostering innovation-driven sustainability, empowerment strategies can help SMEs transition from short-term survivalist approaches to long-term competitiveness and resilience.

In conclusion, the relationship between Bumiputera SME empowerment and sustainable practices is mutually reinforcing. Empowerment equips SMEs with the skills, resources, and innovation capacity needed to adopt sustainable practices, while sustainability, in turn, enhances resilience, competitiveness, and community impact. However, the realization of this relationship requires policies and initiatives that integrate human capital development, innovation support, and sustainability-focused training. By embedding sustainability within empowerment frameworks, Bumiputera SMEs can evolve into resilient, competitive, and socially responsible enterprises, capable of driving inclusive economic growth in Malaysia's digital and green economy.

The Relationship Between Bumiputera SMEs Empowerment and Human Capital Development

The empowerment of Bumiputera SMEs in Malaysia is strongly tied to the development of human capital, as the sustainability and competitiveness of these enterprises depend on their ability to nurture skilled, innovative, and adaptable workforces. Bumiputera SMEs represent a significant proportion of Malaysia's SME sector, contributing to employment and innovation capacity (Hanifah et al., 2017). However, they continue to face persistent challenges, including limited access to skilled workers, weak creativity, and a lack of knowledge resources (Hanifah et al., 2019). Addressing these gaps requires a deliberate emphasis on human capital development, which serves as the foundation for empowering SMEs to adopt and thrive within human-centric digital transformation frameworks.

Human capital development enhances empowerment by equipping SME owners and employees with competencies in innovation, problem-solving, and proactiveness qualities critical to navigating digital transformation. Empirical studies indicate that specific human capital, such as creativity and innovativeness, has a direct impact on innovation performance within Bumiputera SMEs, with innovation culture acting as a key mediator (Hanifah et al., 2017, 2019). This suggests that digital empowerment strategies must be closely integrated with efforts to strengthen innovation culture, thereby enabling SMEs to respond dynamically to shifting market conditions while maintaining competitiveness.

Furthermore, the relationship between human capital and SME performance has been reinforced by research highlighting the role of self-efficacy. For instance, Zuhir et al. (2019) demonstrated that human capital, when combined with confidence in entrepreneurial skills, significantly enhances firm performance among Bumiputera SMEs. Human-centric digital transformation supports this dynamic by providing platforms, tools, and digital ecosystems that empower entrepreneurs to test new ideas, enhance efficiency, and reach wider markets. Thus, empowerment through digitalization cannot be achieved in isolation but requires continuous human capital upgrading to maximize its benefits.

Education and capacity-building initiatives, particularly within the STEM disciplines, provide another crucial avenue for strengthening the empowerment-human capital nexus. Ali et al. (2021) emphasize that effective STEM education enhances graduate capabilities to meet SMEs' workforce expectations, thereby narrowing the skills gap that hampers innovation. For Bumiputera SMEs, embedding digital literacy, data analytics, and human-centered design into training programs ensures that the workforce is adequately prepared for digital transformation. By prioritizing human capital development, SMEs not only strengthen their competitiveness but also create inclusive pathways for the Bumiputera community in Malaysia's evolving digital economy.

Finally, empowerment through human capital development must be situated within broader socio-economic and generational contexts. As Furqon et al. (2025) highlight, younger generations of entrepreneurs, particularly Gen Z, are increasingly empowered through digital platforms that amplify human and social capital. For Bumiputera SMEs, leveraging this demographic shift means adopting human-centric digital transformation approaches that align with younger workers' expectations of inclusivity, collaboration, and creativity. When empowerment strategies address both structural limitations and emerging generational opportunities, Bumiputera SMEs can position themselves as resilient, innovative, and future-ready contributors to Malaysia's

economic growth.

The Relationship Between Bumiputera SMEs Empowerment and Digital Transformation

Digital transformation is increasingly recognized as a powerful enabler of empowerment for Bumiputera SMEs in Malaysia, providing opportunities to expand market access, optimize operations, and enhance competitiveness in a rapidly digitalizing economy. One of the most effective empowerment tools lies in digital literacy training, which equips entrepreneurs with the ability to leverage online marketing, sales, and networking platforms. This not only improves visibility and product presentation but also allows Bumiputera SMEs to compete on a more level playing field in domestic and international markets (Nugroho et al., 2025). Through a human-centric approach, digital literacy directly supports capacity building and strengthens SMEs' resilience in the digital era.

Despite its potential, the digital empowerment of Bumiputera SMEs is constrained by multiple structural and behavioral challenges. Financial barriers often limit investment in digital tools, while inadequate internet infrastructure restricts adoption in rural or semi-urban areas where many Bumiputera entrepreneurs are located. Furthermore, generational mindset gaps present additional resistance, as older SME owners may lack the motivation or confidence to adopt digital solutions (Nugroho et al., 2025). These limitations suggest that empowerment requires not only individual digital upskilling but also systemic reforms such as improved infrastructure, government incentives, and culturally tailored training programs that address Bumiputera-specific business realities.

The adoption of strategic digital tools has proven to be transformative for SMEs across different contexts. Bennacer et al. (2025) highlight that digital strategies such as cloud-based solutions, digital marketing, and investment in digital skills directly contribute to business growth, operational efficiency, and customer engagement. For Bumiputera SMEs, such strategies can enhance brand competitiveness, streamline processes, and foster stronger customer loyalty. Importantly, when implemented through a human-centric lens, these strategies not only support efficiency but also enhance customer experiences and trust, aligning with the cultural values of community and relationship-building that underpin Bumiputera enterprises.

Empowerment can also be framed within a digital-based empowerment model. Doktoralina et al. (2025) demonstrate that combining digital literacy training, product innovation, and improved market access produces a synergistic effect that enhances SMEs' competitiveness and sustainability. This model has particular relevance for Bumiputera SMEs, who often face historical disadvantages in market penetration and innovation. By integrating digital transformation into the broader goal of empowerment, Bumiputera SMEs can develop not only technological readiness but also long-term adaptability and market resilience. Such a model highlights the importance of embedding innovation and community development into empowerment frameworks.

Finally, the integration of sustainability principles within digital transformation offers Bumiputera SMEs an avenue to enhance reputation and attract stakeholders who value responsible practices. Mick et al. (2024) argue that sustainable digital transformation, which aligns digital maturity with environmental and social goals, creates competitive advantages while addressing long-term challenges. For Bumiputera SMEs, adopting such an approach means leveraging digital platforms not only for profit but also to demonstrate commitment to community well-being and ecological stewardship. This positions digital transformation as more than a technological shift; it becomes a human-centric strategy for holistic empowerment, embedding innovation, inclusivity, and sustainability into Bumiputera SME growth trajectories.

Topic Expert

The Topic Experts module in Scopus AI (as of 25 September 2025) identifies a cluster of scholars whose work, though not explicitly focused on Bumiputera SMEs, offers highly transferable insights into human-centric approaches to digital empowerment particularly through the lens of narrative design and social innovation. Among the most influential is Tee, Mxin M. (h-index = 5; 103 citations), whose research centers on storytelling as a strategic tool for advancing the Sustainable Development Goals (SDGs) and fostering community-driven change (Somthawinpongsai, Vorayotha, Yang, & Tee, 2025). Tee's expertise underscores a

critical yet often overlooked dimension of digital transformation: the power of narrative to humanize technology, build trust, and articulate cultural value. For Bumiputera SMEs many of which operate in heritage-rich sectors such as traditional crafts, halal food, and eco-tourism this insight is transformative. Digital platforms become not just sales channels but storytelling spaces where entrepreneurs can convey the authenticity, ethics, and community roots of their products, thereby differentiating themselves in crowded digital marketplaces.

Complementing Tee's work, Somthawinpongsai, Chanyanan C. (50 citations; h-index = 2) contributes a practical model the Koh Kret Model that integrates narrative design with grassroots social innovation to empower local artisans and micro-enterprises (Somthawinpongsai et al., 2025). This model demonstrates how digital storytelling, when co-created with communities, can enhance the visibility and credibility of local cultural artifacts, leading to increased income and user satisfaction. The relevance to Bumiputera SMEs is direct: just as Thai artisans in Koh Kret leveraged digital narratives to preserve cultural identity while accessing broader markets, Bumiputera entrepreneurs can use similar approaches to position their businesses as custodians of Malay and indigenous heritage in the digital economy. This reframes digital transformation from a technical challenge into a cultural opportunity, aligning economic empowerment with identity affirmation.

Further reinforcing this perspective, Lu, Liangyan L. (5 citations) emphasizes that effective narratives must be human-centered, emotionally resonant, and stakeholder-inclusive to drive meaningful engagement (Somthawinpongsai et al., 2025). In the context of digital transformation, this means moving beyond generic marketing content to co-create stories with customers, employees, and community members stories that reflect shared values, local challenges, and collective aspirations. For Bumiputera SMEs, which often operate within tight-knit social networks, such participatory storytelling can strengthen social capital while amplifying digital reach. Lu's work thus highlights that digital literacy for Bumiputera entrepreneurs must include narrative competence the ability to craft and curate compelling, culturally grounded digital content.

Notably, none of these experts focus specifically on Malaysia or Bumiputera enterprises, revealing a significant gap in the literature: while the conceptual tools for human-centric digital empowerment exist, they have not been systematically adapted to Malaysia's unique socio-political and cultural context. This absence underscores an urgent research and policy opportunity. Malaysian institutions such as MARA, SME Corp, and local universities could collaborate with narrative and digital innovation scholars to develop Bumiputera-specific digital storytelling frameworks that integrate Islamic values, communal ethics, and indigenous knowledge systems.

In sum, the Topic Experts analysis reveals that empowering Bumiputera SMEs through digital transformation requires more than software or connectivity it demands narrative agency. By equipping Bumiputera entrepreneurs with the skills to tell their own stories through digital media, policymakers and support agencies can foster not only market competitiveness but also cultural resilience and social inclusion. As Tee, Somthawinpongsai, and Lu collectively demonstrate, when digital transformation is anchored in human experience and cultural meaning, it becomes a truly empowering force.

Emerging Themes

The consistent theme of digital transformation frameworks for SMEs underscores the sustained relevance of structured approaches to digitalization. Research consistently demonstrates that such frameworks provide SMEs with the necessary guidance to navigate resource constraints, limited expertise, and market pressures (Ghobakhloo & Iranmanesh, 2021; Li et al., 2018). Two key insights stand out: first, digital transformation frameworks that are specifically tailored to SMEs' resource limitations significantly enhance operational efficiency and competitiveness; and second, when frameworks are contextualized to local cultural and economic conditions, adoption rates and long-term sustainability improve (Bohorquez & Esteves, 2016). This evidence leads to the proposition that digital transformation frameworks customized for SMEs can directly improve firm performance and resilience in dynamic environments.

The rising theme of organizational agility and digital capabilities highlights a growing recognition of the need for SMEs to be adaptive in their digital transformation journeys. Unlike the structural emphasis of frameworks,

this theme stresses dynamic capabilities such as data-driven decision-making, platform utilization, and customer-centric digital solutions (Mikalef & Krogstie, 2020). Equally important is strategic agility, which allows SMEs to rapidly reconfigure resources and respond proactively to environmental turbulence (Teece et al., 2016; Raimo et al., 2023). Empirical findings suggest that agility mediates the relationship between digital capabilities and firm performance, enabling SMEs to achieve higher innovation and market responsiveness. Hence, investments in both digital capabilities and agility emerge as critical factors in sustaining competitive advantage.

The novel theme of digital twin technology represents an emerging frontier in SME digital transformation. Digital twins—virtual replicas of physical processes or products offer the possibility of operational optimization through real-time simulations that improve efficiency, reduce downtime, and enhance product quality (Kritzinger et al., 2018; Jones et al., 2020). At the same time, digital twins enable innovation and experimentation, providing SMEs with low-cost avenues to test new product designs and adapt rapidly to shifting market demands (Fuller et al., 2020). While adoption remains limited due to cost and knowledge barriers, the potential of digital twin technology to reshape SME competitiveness and innovation capacity is increasingly evident.

Together, these themes illustrate a layered continuum in SME digital transformation research. The consistent presence of frameworks provides foundational guidance for structured digital adoption. The rising emphasis on organizational agility and digital capabilities reflects the growing need for SMEs to move beyond static strategies and embrace adaptability. Finally, the novel exploration of digital twin technology points toward advanced innovations that could redefine SME competitiveness in the digital economy.

CONCLUSION

This study examined the empowerment of Bumiputera SMEs in Malaysia through human-centric digital transformation, with a particular focus on emerging research themes: digital transformation frameworks, organizational agility and digital capabilities, and digital twin technology. The findings underscore three main insights. First, consistent evidence supports the role of digital transformation frameworks as structured approaches that guide SMEs in overcoming resource constraints and enhancing resilience. Second, the rising importance of organizational agility and digital capabilities reflects an increasing recognition that flexibility, adaptability, and strategic resource reconfiguration are essential for SMEs to remain competitive in a rapidly changing digital landscape. Finally, the novel emergence of digital twin technology illustrates the potential for cutting-edge innovations to revolutionize SME operations by enabling real-time optimization and experimentation.

From a theoretical perspective, this study contributes to the digital transformation literature by highlighting a multi-level continuum of SME empowerment: foundational structures (frameworks), dynamic processes (agility and capabilities), and frontier technologies (digital twins). This layered approach advances existing theories of resource-based and dynamic capability perspectives by demonstrating how SMEs progress from structured digital adoption to adaptive strategies and, ultimately, to technological innovation.

In terms of practical implications, the findings suggest several actionable strategies for policymakers and practitioners. Policymakers should prioritize the development of context-sensitive digital transformation frameworks that are tailored to the cultural and economic realities of Bumiputera SMEs. Business support agencies and training institutions should invest in digital literacy and capability-building programs to enhance SMEs' agility and resilience. At the enterprise level, SMEs should explore emerging tools such as digital twin technology to strengthen innovation capacity and operational efficiency, while also integrating sustainability into their digital strategies to meet the expectations of socially conscious markets.

Despite its contributions, this study is not without limitations. First, the review relied on secondary sources and abstract-level insights, which may not capture the full depth of SME experiences in digital transformation. Second, the scope was primarily limited to scholarly publications indexed in Scopus, potentially excluding valuable insights from industry reports or policy documents. Finally, the emerging nature of digital twin technology means that empirical evidence on its application in SMEs remains scarce, limiting the ability to

draw definitive conclusions.

For future research, several avenues are recommended. Longitudinal studies are needed to track the digital transformation journeys of Bumiputera SMEs over time, examining how frameworks, agility, and technologies interact in practice. Comparative studies between Bumiputera SMEs and other ethnic or regional SME groups could yield insights into the role of cultural and socio-economic contexts in shaping digital adoption. Additionally, empirical investigations into the implementation of digital twin technology in SMEs will be crucial for assessing its feasibility, costs, and long-term benefits. Finally, integrating perspectives from sustainability research could help position human-centric digital transformation as not only a tool for economic empowerment but also a driver of inclusive and responsible business practices.

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