

Technology-Based Socio-Economic Transformation: The Role of Community Service in Enhancing Marketing Human Resources Quality in Micro, Small, and Medium Enterprises (MSMEs)

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Abstract

This study aims to examine the role of community service in driving technology-based socio-economic transformation through the enhancement of marketing human resources (HR) quality within the Micro, Small, and Medium Enterprises (MSMEs) sector. Using a qualitative approach through a literature review method, this research analyzes 22 selected scientific articles out of a total of 30 references obtained from Google Scholar and credible academic websites throughout 1989–2025. Descriptive analysis is employed to identify intervention patterns, underlying theories, and tangible outcomes of community service programs focused on strengthening digital and marketing competencies of MSME actors. The findings indicate that the integration of digital technology and participatory community mentoring can improve marketing strategy effectiveness, expand consumer reach, and reinforce the position of MSMEs in the digital economic value chain. These results are supported by the Technology Acceptance Model, Social Cognitive Theory, and Resource-Based View, which position knowledge and capability as key assets in addressing the challenges of digital transformation. This study concludes that community service oriented towards strengthening technology-based marketing serves as a strategic instrument in building MSME sustainability and improving the economic welfare of local communities.

Keywords: Socio-Economic Transformation, Digital Technology, Community Service, MSMEs, Marketing Human Resources

Transformasi Sosial-Ekonomi Berbasis Teknologi: Peran Pengabdian Masyarakat dalam Meningkatkan Kualitas SDM Pemasaran UMKM

Abstrak

Penelitian ini bertujuan untuk mengkaji peran pengabdian masyarakat dalam mendorong transformasi sosial-ekonomi berbasis teknologi melalui peningkatan kualitas sumber daya manusia (SDM) pemasaran pada sektor Usaha Mikro, Kecil, dan Menengah (UMKM). Menggunakan pendekatan kualitatif melalui metode tinjauan pustaka, penelitian ini menganalisis 22 artikel ilmiah terpilih dari total 30 referensi yang diperoleh dari Google Scholar dan situs web akademik kredibel sepanjang tahun 1989–2025. Analisis deskriptif digunakan untuk mengidentifikasi pola intervensi, teori yang mendasari, serta hasil nyata dari program pengabdian masyarakat yang terfokus pada penguatan kompetensi digital dan pemasaran pelaku UMKM. Hasil kajian menunjukkan bahwa integrasi antara teknologi digital dan pendampingan masyarakat secara partisipatif mampu meningkatkan efektivitas strategi pemasaran, memperluas jangkauan konsumen, serta memperkuat posisi UMKM dalam rantai nilai ekonomi digital. Temuan ini diperkuat oleh teori Technology Acceptance Model, Social Cognitive Theory, dan Resource-Based View yang menempatkan pengetahuan dan kemampuan sebagai modal utama dalam menghadapi tantangan transformasi digital. Penelitian ini menyimpulkan bahwa pengabdian masyarakat yang berorientasi pada penguatan pemasaran berbasis teknologi menjadi instrumen strategis dalam membangun keberlanjutan UMKM dan meningkatkan kesejahteraan ekonomi komunitas lokal.

Kata kunci: Transformasi Sosial-Ekonomi, Teknologi Digital, Pengabdian Masyarakat, UMKM, SDM Pemasaran

INTRODUCTION

The socio-economic transformation in the digital era has become an inevitable phenomenon in the dynamics of national development, especially amid the rapid advancement of information and communication technology that extends even to the informal and micro sectors. In this context, micro, small, and medium enterprises (MSMEs) represent a vital economic element facing both pressures and opportunities to adapt. The advent of digital technology has opened new avenues in marketing strategies, distribution, and consumer interaction. However, not all MSME actors have adequate human resources (HR) readiness to respond to these changes, particularly in the realm of digital marketing. The gap between technology access and MSME actors' competencies is a fundamental challenge that hinders the enhancement of MSMEs' competitiveness at both local and global levels (Kusumawardhani et al., 2015).

Meanwhile, community service conducted by universities or professional institutions inherently holds great potential to bridge the knowledge and skill gaps of MSME HR in technology-based marketing. Educational, participatory, and contextual community service activities can act as catalysts for improving MSME HR quality, especially in understanding and implementing digital marketing strategies such as online branding, social media utilization, and e-commerce. Nevertheless, the effectiveness of such programs is heavily influenced by the approaches used, continuity of mentoring, and relevance of the material to field needs. It is necessary to reassess how far community service can address the real needs of MSMEs in facing technology-based socio-economic transformation.

The phenomenon of digitalization has shifted market interaction patterns, where conventional marketing is increasingly disrupted by digital algorithms, rapidly changing consumer preferences, and online platforms dominating commercial spaces (Dwivedi et al., 2021). Amidst this wave of change, MSME actors cannot rely solely on business intuition or inherited experience but require a systematic understanding of modern marketing. HR competencies in digital literacy, utilization of big data for market analysis, and the ability to adapt to technology trends become key factors for survival and growth. Ironically, many MSME actors, especially in rural areas, have yet to be reached by structured technology-based coaching programs, thus remaining passive users of technology without strategic understanding of its benefits.

From the human resource development perspective, technology-based transformation demands interventions that are educational and empowering in a sustainable manner (Khuzaini et al., 2024). Community service in the form of training, workshops, mentoring, and business incubation serves as a relevant instrument to transfer knowledge while fostering a digital mindset among MSME actors. However, the implementation of these activities often remains symbolic and project-based, rather than being part of a long-term MSME empowerment ecosystem. Integration among academic institutions, local governments, and business communities is needed to formulate adaptive community service models that respond to technological dynamics and concretely enhance HR quality.

Technology-based socio-economic transformation essentially involves digitalization and simultaneously touches upon changes in work culture, social networks, as well as production and consumption patterns. In this regard, MSMEs need to be encouraged not merely to become objects of empowerment but active agents in developing technology-based business strategies. Community service that adopts participatory and collaborative approaches is crucial to fostering a sense of ownership and creative capacity among MSMEs. This active involvement model also enables a two-way transfer of knowledge, whereby MSME actors become partners in socio-economic innovation based on technology.

At the policy level, integration between community service programs and strategies to enhance MSME competitiveness must be strengthened through regulations and financial support. Universities and research institutions, as centers of scientific excellence, should be granted strategic space to contribute systemically to MSME human resource development. This approach can create synergy between academic research and real field needs. Furthermore, community service should be directed to produce measurable outputs, such as improvements in digital marketing skills, development of promotional content, and data-driven market analysis capabilities that can be directly implemented by MSMEs.

As a concrete example, community service programs by Universitas Gadjah Mada involving digital branding and social media marketing training for MSMEs in Sleman have demonstrated that technology-based interventions can significantly increase MSME turnover and market reach within six months (Masyarakat UGM, 2024). Similarly, Universitas Brawijaya's digital business incubation program for MSMEs in Malang successfully accelerated the adoption of local e-commerce platforms such as Tokopedia and Shopee through targeted creative content strengthening and digital marketing (Faculty of Agriculture, Universitas Brawijaya, 2024). These case studies indicate that when community service programs are designed based on needs, sustainable, and oriented toward digital transformation, the resulting socio-economic impacts become more tangible and lasting.

Based on the above, this study aims to examine the strategic role of community service in enhancing the quality of MSME human resources in marketing through a technology-based socio-economic transformation approach. This research will critically analyze how existing community service programs can accelerate technology adaptation, improve digital marketing literacy, and create long-term impacts for the sustainability of MSMEs within the continuously evolving digital economic ecosystem.

Socio-economic Transformation

Socio-economic transformation refers to the structural and cultural changes occurring within society as a result of technological innovation, economic system developments, and development policy interventions that directly impact patterns of production, consumption, and social relations (Kemp et al., 2022). This transformation reflects a shift from traditional economic models toward knowledge- and digital-based economies, where

added value is no longer derived solely from physical goods but also from data, information, and collaborative networks. In the context of community empowerment, socio-economic transformation is important because it alters the landscape of opportunities and risks faced by vulnerable groups such as MSMEs, which have often been marginalized from the mainstream flows of globalization and digitalization. In other words, inclusively and participatively managed socio-economic transformation can pave the way for social justice, improved welfare, and the reduction of structural inequalities.

Digital Technology

Digital technology refers to a set of computer- and internet-based tools, systems, and platforms that enable the rapid, broad, and efficient processing, distribution, and exchange of information (Haleem et al., 2022). In the Industry 4.0 era, digital technology serves as a supporting tool and a primary space for economic activity, communication, education, and public services. For MSMEs, digital technology opens strategic opportunities to access wider markets through social media, e-commerce, digital financial applications, and customer data analytics. However, utilizing these technologies requires competent and adaptive human resources; without adequate understanding, digitalization can actually widen the digital divide and reinforce economic exclusion. The ability to contextually integrate digital technology into business strategies is an essential prerequisite for the sustainability and competitiveness of MSMEs.

Community Service

Community service is a tangible form of social responsibility by academics in transforming scientific knowledge into practical solutions for societal problems, particularly in driving social change and community-based development (Regita, 2023). Unlike charitable approaches, community service emphasizes participatory processes, empowerment, and collaboration between universities and communities to produce sustainable impacts. In the context of strengthening MSMEs, community service plays a crucial role in disseminating technology, building digital literacy, and enhancing managerial and marketing capacities of small business actors. Effective community service is characterized by success in building trust, the relevance of training materials, and continuous mentoring that can stimulate local innovation and reduce dependence on external parties. Community service thus becomes a strategic socio-economic intervention in the era of digital transformation.

MSMEs (Micro, Small, and Medium Enterprises)

MSMEs are the backbone of Indonesia's economy, playing a major role in absorbing labor, distributing income, and strengthening the domestic economy through community-based economic activities (Ausat et al., 2022). However, amidst the wave of digitalization and global market competition, MSMEs face significant challenges regarding technology access, financing, managerial skills, and market penetration. MSMEs' typically local scale and resource constraints make them vulnerable to external changes, including economic crises and digital disruption. Collaborative and sustainable empowerment strategies are

needed to enhance MSMEs' adaptability, particularly in accessing information, technology, and digital markets. MSMEs that can innovate and optimally leverage technology hold great potential to become drivers of locally inclusive and resilient socio-economic transformation.

Marketing Human Resources

Marketing human resources in the MSME context refer to individuals or groups who possess competencies in designing, executing, and evaluating marketing strategies for products or services to effectively reach target markets (N. Nurmala, 2022). In the digital era, marketing HR quality is determined not only by conventional skills such as communication, negotiation, and promotion but also includes digital literacy, social media utilization, customer data analysis, and e-commerce platform management skills. Improving the quality of marketing human resources is crucial to ensure MSMEs survive and grow amid a highly dynamic and competitive market landscape. Training, mentoring, and knowledge transfer from educational institutions through community service are vital to strengthening the adaptive capacity and innovation of marketing HR in facing the challenges of the digital transformation era.

METHOD

This study employs a literature review approach with a qualitative method aimed at enriching the scientific references related to community service in the context of technology-based socio-economic transformation, particularly in improving the quality of marketing human resources (HR) in the micro, small, and medium enterprises (MSMEs) sector. The literature review was chosen as the primary method because it enables the researcher to examine various relevant scientific sources, compare findings, and identify patterns, challenges, and potential solutions that have been discussed in previous studies. A qualitative approach is used because this research focuses not on numerical measurement but rather on deep, interpretative, and contextual reasoning regarding the content and meaning of the reviewed literature. The study does not aim to produce statistical generalizations but emphasizes conceptual and thematic understanding of the contribution of community service to the development of MSME marketing HR capacity within the digital transformation landscape.

The analysis technique employed is descriptive analysis, which involves outlining the content, trends, and main focus of the selected articles. Through this analysis, the researcher formulates a comprehensive understanding of how community service is implemented, the strategies used, and its impact on technological literacy and MSME marketing capacity. The results of the analysis are presented in a systematic narrative form to create a synthesis of theoretical and practical insights. The data sources in this study were obtained from scientific articles available on Google Scholar and other credible websites publishing research results, reputable national and international journals, seminar proceedings, and relevant institutional reports, especially those focusing on MSMEs, community service, digital marketing, and technology-based socio-economic

transformation. The publication period of the reviewed articles ranges from 1989 to 2025 to obtain current and relevant understanding of technological dynamics and MSME development policies.

At the initial stage, the researcher identified 30 potentially relevant articles related to the research topic. However, after a rigorous selection process based on criteria such as thematic relevance, source credibility, data currency, and depth of discussion, the number of articles deemed suitable for in-depth analysis was narrowed down to 22. The selection process was conducted systematically, considering the direct relevance of article content to the research focus, namely the role of community service in improving the quality of MSME marketing HR amid technological transformation. The steps in data analysis include: (1) identifying the main themes of each selected article; (2) thematic categorization based on community service implementation models, HR improvement strategies, and technology-based approaches; (3) narrative synthesis of similarities and differences in findings; and (4) formulation of theoretical interpretations that support the research conclusions. The entire process is conducted systematically to maintain objectivity and accuracy in constructing the conceptual framework of the study.

FINDING AND DISCUSSION

Technology-based socio-economic transformation is a systemic response to the dynamics of digital globalization that have fundamentally reshaped the business landscape. In the context of MSMEs (Micro, Small, and Medium Enterprises), this transformation demands the adoption of technology as well as the adaptation of human resources to manage change productively. One theory that explains the importance of human resource adaptation to technology is the Technology Acceptance Model (TAM) developed by (Davis, 1989), which states that perceived ease of use and perceived usefulness determine the extent to which technology is accepted by individuals. In the case of MSMEs, these perceptions can only be built if human resources possess basic capacities such as digital literacy, online communication skills, and proficiency in using social media for marketing. However, challenges arise when the majority of MSME actors in non-urban areas have minimal exposure to digital technology and tend to rely on conventional practices in running their businesses, thus increasing the risk of being left behind in digital market competition if interventions are not promptly implemented. The role of universities through community service programs becomes crucial to accelerate this adaptation process by providing technical training, fostering collective awareness of the importance of digital transformation as part of business sustainability, especially in areas with limited access to formal training and basic digital infrastructure.

The quality of marketing human resources is one of the most critical aspects in developing MSMEs in the digital era because this competence determines competitiveness amid a market increasingly dependent on internet-based technology and communication. The Resource-Based View (RBV) Theory by (Barney, 1991) emphasizes that valuable, rare, inimitable, and non-substitutable internal resources—such as digital marketing skills—can become sources of sustainable competitive advantage if managed with the right

strategies. In the MSME context, these skills include mastery of social media algorithms, ability to design engaging content, and data-driven consumer behavior analysis, which are often unevenly possessed by business actors. The role of community service is vital, as it bridges the gap between academic knowledge and practical field needs, which are often dynamic and contextual. A study by (Nurhayati et al., 2023) in Pasar Daya, Makassar, showed that digital marketing training significantly increased sales among traditional trader groups. Through this training, traders who had not previously used digital platforms like pasar.id were able to market their products online. The results included improved understanding and skills in using digital technology, contributing to their competitiveness in the digital era. Another study by (S. Nurmala, 2022) in Ciburuy Village, West Java, also demonstrated the positive impact of digital marketing training on MSMEs. The training helped MSME actors understand and utilize social media to market their products, thereby expanding market reach and boosting the local economy. Both studies highlight the importance of improving human resource quality in digital marketing. Structured training responsive to market needs can foster an adaptive and creative mindset among MSME actors, enabling them to survive and thrive amid digital disruption (Pradiptya et al., 2024).

Technological change requires MSMEs to adapt technically, demanding transformation in the interaction pattern between academics and communities so that community service is not top-down but collaborative and empowering; in this context, the Participatory Action Research (PAR) approach, as explained by (Kemmis & McTaggart, 2005), becomes relevant because it positions MSME actors as active subjects consciously involved in problem identification, solution formulation, and evaluation of outcomes. This approach is both a training method and a collective social learning process that enables MSMEs to build capacity independently and sustainably, emphasizing participation, reflection, and continuity. A study by Brawijaya University in the Pujon Kidul Tourism Village, Malang Regency, showed that digital marketing training improved technical skills and created a digitally aware MSME community. The training helped MSME actors independently manage social media accounts and develop authentic storytelling-based content aligned with local characteristics. The results showed an increase in digital marketing capabilities contributing to their competitiveness in the digital era. Additionally, the Village-Owned Enterprise (BUMDes) Sumber Sejahtera in Pujon Kidul faced challenges in digital marketing such as limited human resource skills in understanding digital marketing and content creation. However, with structured training responsive to market needs, MSME actors were able to develop an adaptive and creative mindset, enabling them to survive and grow amid digital disruption (Mega et al., 2022). These findings also show that when MSMEs are actively involved in the learning process, they are not merely passive beneficiaries but co-constructors of knowledge who create solutions relevant to their context, making technology a tool for empowerment rather than merely a burden of adaptation.

The importance of considering socio-cultural context in implementing technology-based community service is a crucial aspect often overlooked, although the success of

human resource capacity building programs depends greatly on the suitability of the approach to local social realities; here, Bandura's Social Cognitive Theory (1986) asserts that learning results from dynamic interactions among individuals, behavior, and social environment, so the success of technology interventions depends not only on the content of training but also on how the training is packaged and accepted within the existing social ecosystem (Bandura, 2001). When community service programs neglect local norms, communication styles, everyday language, or social interaction habits, there is a high likelihood of passive resistance or failure in internalizing the material, as shown by a study by (Ahmat Adil et al., 2025) in Batu Asak Village, Central Lombok, which highlighted the importance of socio-cultural approaches in digital marketing training for MSMEs. Training that does not consider local culture and village social structure tends to experience low participation and difficulties in applying the knowledge imparted. Conversely, when training is designed by actively involving the community in planning communication strategies and delivery methods, the learning process becomes more contextual and applicable. This demonstrates that successful technology transfer in community service requires a participatory approach rooted in the social dynamics understood and lived by the local community.

From a local economic perspective, the resilience of MSMEs (Micro, Small, and Medium Enterprises) in facing crisis situations is highly correlated with the quality and capability of their marketing human resources, especially in the context of digital adaptation, which has become increasingly essential in disruptive eras such as the COVID-19 pandemic; experience shows that MSMEs that have participated in community service programs focused on digital marketing have a much greater chance of maintaining and even increasing their turnover compared to those who have not received similar guidance, because they are already accustomed to optimally utilizing e-commerce platforms and social media as flexible and efficient marketing communication and distribution channels. One study by (Susanti, 2020) in Sayang Village, Jatinangor District, highlights the importance of digital marketing training in the development of technology-based MSMEs. This training includes topics such as fostering entrepreneurial spirit, sharing sessions, and the use of digital platforms like GrabFood and GoFood. Evaluation results showed that this activity received positive feedback and was considered to provide insights and inspiration for MSME actors. The study emphasizes that strengthening the capacity of human resources in digital marketing is not merely theoretical but a strategic investment that can reinforce the foundation of the local economy. With structured training that is responsive to market needs, MSMEs can become more adaptive to market changes and capable of competing in an increasingly competitive digital environment.

Technological transformation not only expands the market for MSMEs but also fundamentally changes consumer interaction patterns and decision-making mechanisms increasingly influenced by digital information access and peer-to-peer recommendations, requiring MSMEs to quickly adapt to dynamic market trends and preferences; in this context, Rogers' Diffusion of Innovations theory (2003) provides a relevant framework for understanding the dissemination process of marketing technology among MSME

communities, where entrepreneurs classified as early adopters play a strategic role as pioneers and role models capable of influencing other groups through demonstrating successful use of digital innovation (Rogers et al., 2019). Real-world practice of collective and community-based approaches in community service can be found in programs run by the Mandala Indonesia College of Administrative Sciences (STIAMI), which focuses on empowering digital-based MSMEs in Sigapiton Village (Veteran Jakarta, 2022). Through this program, STIAMI facilitates training and mentoring for local MSME actors to improve their digital capacities in marketing products and managing businesses more efficiently. One key strategy used is encouraging MSME integration with popular digital platforms such as local marketplaces and social media, as well as introducing cashless payment technologies to broaden market access and enhance product competitiveness. The program accelerates technology adoption through social interactions among MSME actors and benchmarking, forming a collaborative ecosystem that allows the exchange of best practices in product innovation, financial management, and promotional strategies. Through informal clustering and participatory approaches, this mentoring creates a multiplier effect that strengthens networks among entrepreneurs and builds MSME resilience against the dynamics of the digital market. Thus, the community service program run by STIAMI in Sigapiton Village serves as a concrete example of how higher education institutions can be catalysts in MSME digital transformation, in terms of technology, human capacity building, community solidarity, and overall business sustainability in facing modern economic challenges.

The success of community service in improving the quality of MSME marketing human resources indeed depends heavily on the continuity and consistency of the program because without systematic follow-up and structured evaluation mechanisms, the training provided tends to produce only temporary impacts that do not last, making capacity-building efforts less optimal and unsustainable; many traditional community service programs run only for short periods without adequate monitoring, making it difficult to measure the extent to which behavior change and marketing competence improvements truly occur after the training ends. To address this issue, several leading universities have begun adopting innovative approaches by integrating digital application-based monitoring and evaluation frameworks that enable continuous oversight and active communication between facilitators and MSME partners. For example, Gadjah Mada University (UGM), through its Faculty of Economics and Business (FEB), developed a digital reporting system based on Google Forms supported by WhatsApp groups as effective communication and coordination channels. This program aims to simplify financial reporting for Micro, Small, and Medium Enterprises (MSMEs) to promote digitalization and operational efficiency. Since its introduction in 2023, this system has been used by nearly 1,000 users, including 328 MSMEs, 600 university students, and 56 vocational high school students across regions such as Yogyakarta, Sleman, Surabaya, and Bandung (Nugroho, 2024). Through this approach, UGM provides tools that ease financial reporting, build a sustainable learning community, so MSME partners feel continuously supported and motivated to consistently apply the knowledge gained.

Therefore, this digital reporting system becomes a practical and strategic solution to ensure that community service activities do not remain mere ceremonies but produce real, sustainable impacts in improving MSME marketing capacity in the digital era.

Thus, socio-economic transformation based on technology fundamentally depends on the quality of human resources who are not only capable of absorbing and adopting technology but also possess the capability to manage and effectively integrate it into business processes to drive sustainable business development; in this context, community service plays a role beyond traditional academic instruments because it becomes a capacity-building strategy that bridges the gap between theory and field practice, especially when designed with participatory principles involving MSME actors as active subjects, deeply considering local socio-cultural contexts, and ensuring continuity through systematic monitoring and evaluation. The integration of various theories such as the Technology Acceptance Model, Resource-Based View, and Diffusion of Innovations, along with empirical research findings from diverse case studies in Indonesia—ranging from digital marketing training in West Java to MSME clusters in Makassar and Participatory Action Research (PAR) approaches in Malang—demonstrates that MSMEs can achieve significant progress when provided with appropriate mentoring and synergy among educational institutions, government, and communities. This synergistic approach not only strengthens the technical and marketing capacities of MSMEs but also builds an inclusive and adaptive innovation ecosystem responsive to digital economic dynamics, ultimately creating broad and sustainable socio-economic impacts at local and national levels.

CONCLUSION

Technology-based socio-economic transformation has become a key catalyst in enhancing the competitiveness of MSMEs in the digital era. In this context, community service plays a crucial role as a vehicle for knowledge and skill transfer, especially in digital marketing aspects that are vital to business sustainability. The literature review findings indicate that MSMEs' success in responding to technological changes largely depends on the quality of human resources, particularly their ability to manage digital platforms, social media, and online marketing communication strategies. Structured, participatory, and locally adaptive community service programs have proven to positively impact MSME marketing capacity, reflected in increased revenue, customer reach, and market competitiveness. Therefore, community service interventions should not be viewed merely as temporary academic activities but as strategic investments in building a sustainable socio-economic transformation foundation.

The theoretical implications of this study reinforce the relevance of the Technology Acceptance Model (TAM), Social Cognitive Theory, and Resource-Based View in the context of MSME development through community service approaches. Practically, the results emphasize the importance for universities and higher education institutions not only to transfer technology but also to cultivate adaptive mindsets and digital competencies of MSME actors holistically. Community service integrated with digital

marketing training programs must become a core part of microeconomic development agendas at both local and national levels. For local governments and relevant ministries, a more systemic synergy between MSME empowerment policies and academic platforms needs to be developed, based on data-driven approaches, sustainability, and outcome monitoring.

First, community service programs should be designed as long-term initiatives with sustainable mentoring targets, including post-training assistance through online mentoring or digital learning communities. Second, the training provided must be relevant to the latest marketing technologies, such as the use of artificial intelligence for customer insights, algorithm-based content creation, and utilization of e-commerce platforms. Third, a more inclusive approach is necessary by considering local socio-cultural characteristics to ensure that introduced technologies are truly absorbed and applied by MSME actors. Fourth, universities need to collaborate with industry players, technology companies, and financial institutions to expand access to training, funding, and digital market networks. Finally, strengthening data-based evaluation is essential to measure the effectiveness of community service interventions in improving the quality of marketing human resources concretely and measurably.

This study has several limitations that need to be acknowledged. First, it is a literature review, therefore it does not include primary empirical data that could strengthen the generalizability of the findings. Second, not all reviewed articles possess an equal methodological rigor, so interpretation of results should be approached cautiously. Third, the study predominantly focuses on digital marketing aspects, while other MSME human resource dimensions such as finance, production, or management remain underexplored. Hence, future research employing field-based and mixed-method approaches is recommended to enrich findings and broaden the analytical dimensions for a more holistic understanding of technology-based MSME transformation.

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