MSME digitalization: How are social capital factors in encouraging the use of digital applications?

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A B S T R A C T

This research explores the impact of social capital on the adoption of digital applications within Micro, Small, and Medium Enterprises (MSMEs). In the current competitive environment, embracing digitalization is essential for improving the competitiveness of MSMEs; however, challenges such as weak social networks can impede technology uptake. Utilizing a quantitative approach, the study distributed questionnaires to 160 MSME participants, with data analysed through path analysis using SmartPLS. The findings indicate that social capital—which includes relationships, networks, and trust among business stakeholders—plays a critical role in facilitating access to and adoption of digital applications. Results suggest that MSMEs with strong social networks are more adept at integrating digital technologies, fostering innovation, and improving overall business performance. The study recommends initiatives to enhance collaboration and strengthen social networks among MSMEs to support their digitalization efforts. Ultimately, this research deepens the understanding of social capital's influence on MSME digitalization and offers practical strategies for stakeholders to increase the utilization of digital applications in this sector.

1. Introduction

The digitization of MSMEs is essential for enhancing competitiveness in the contemporary landscape, with social capital playing a crucial role in facilitating the adoption of digital applications. The transition to online sales through digital platforms represents a significant step in the digital transformation of MSMEs (Hoang et al., 2023; Meilariza et al., 2024; Suharyati et al., 2023; Zheng et al., 2023). Efforts to promote digitalization are largely driven by MSME actors' adaptation to social media and marketplace platforms as part of their digital marketing strategies (Komala & Firdaus, 2023; Rahayu et al., 2023; Supari & Anton, 2022). However, MSMEs often encounter obstacles such as a culture that avoids risk and a dependence on outdated systems, which can impede the digital adoption process (Kallmuenzer et al., 2024). Furthermore, misconceptions regarding the complexity and costs associated with digitalization continue to obstruct its effective implementation (Kallmuenzer et al., 2024). Addressing these challenges is vital for ensuring a smoother transition to digital platforms and enhancing overall business performance.

Social capital, encompassing community networks and the relationships among business actors, plays a pivotal role in enabling the exchange of knowledge and experiences related to digital technology usage (Kallmuenzer et al., 2024). This collaborative environment fosters innovation and encourages MSMEs to adopt digital solutions more effectively, ultimately enhancing their operational efficiency and market competitiveness. The strength and frequency of interactions between business people have a significant effect on network effectiveness. Strong and frequent interactions increase the benefits of having more partners as well as solid relationships, although they can reduce the influence of indirect connections (Aagaard, 2018; Casais, 2023; Shrestha, 2018; Ziakis & Vlachopoulou, 2023). Modern information and communication technologies have allowed companies to establish more relationships at lower costs, making business networks more dynamic. This

flexibility allows companies to respond to diverse customer needs more effectively and share core advantages (Nurfarida et al., 2023). Support from local communities and business associations significantly boosts MSMEs' confidence in adopting digital applications, leading to enhanced operational efficiency. For instance, effective support systems like those seen in China highlight the critical role of entrepreneurial networks and relationships, facilitated by local business associations (Seyed-Mohamed & Bolte, 2014). By leveraging cultural heritage and promoting social collaboration, these initiatives can transform environments into vibrant economic hubs, as evidenced by the Barrio de las Letras in Madrid, which ultimately benefits MSMEs (Henche et al., 2020; Seyed-Mohamed & Bolte, 2014). Such transformations not only foster economic growth but also create a supportive ecosystem that encourages innovation and resilience among local businesses. Training programs that promote social interaction and collaboration among MSMEs can significantly enhance mutual trust and drive innovation in technology adoption. A recent review emphasizes the concept of ambidextrous search, revealing that while prior research often explored technology search and market search in isolation, there is a notable gap in understanding their combined effect on innovation performance within the manufacturing sector (Adomako et al., 2023; Bo et al., 2024; Dwumah et al., 2024). According to Heatherton & Walcott (2009), social interaction is a crucial aspect of human existence, fundamentally shaping relationships and social groups. This dynamic process of social engagement involves individuals adjusting their behaviors based on their interactions, where synchronous interactions—characterized by coordinated movement patterns—are closely linked to relationship quality, resulting in more effective collaborations. Such synchronization serves as a tangible indicator of the overall health of interpersonal relationships (Depaoli et al., 2020; Meilariza et al., 2024). By fostering these interactions, MSMEs can create a more innovative and cooperative environment, ultimately enhancing their competitiveness in the market.

By leveraging social capital, Micro, Small, and Medium Enterprises (MSMEs) can not only gain access to digital technologies but also foster an ecosystem that promotes business sustainability and growth. Social capital, particularly those connections enriched with resources, plays a critical role in bridging the digital divide by enhancing access to and utilization of the Internet. This is essential for MSMEs to effectively harness digital technologies (Chen, 2013). Furthermore, social capital manifested through relationships with individuals possessing extensive knowledge can significantly enhance a firm's performance, particularly for small startups (Steinfield et al., 2010). Such relationships provide improved access to information and opportunities, which are vital for the successful adoption of digital technologies (Zhao et al., 2022). MSMEs strategically utilize social capital to navigate economic and digital disruptions. Additionally, cooperatives and MSME centers serve as intervening variables that positively influence the sustainability of MSMEs, underscoring the significance of social capital in adapting to digital transformations. Moreover, social capital is instrumental in driving innovation performance; companies with higher levels of social capital are more adept at conducting cross-border knowledge searches and developing their absorptive capacities, thereby enhancing their overall innovation outcomes (Lyu et al., 2022).

Many Micro, Small, and Medium Enterprises (MSMEs) lack a comprehensive understanding of the concept of social capital and its influence on their capacity to adopt digital applications. Scholars define social capital in various ways; for instance, James Coleman characterizes it as diverse entities within social structures that enable action (Bebbington & Foo, 2024), whereas Pierre Bourdieu views it as a resource linked to a durable network of mutual recognition (Bebbington & Foo, 2024; Whiteley, 2015). The concept spans multiple disciplines, including sociology, economics, education, and health sciences, resulting in a wide array of applications and interpretations (Bhandari & Yasunobu, 2009; Mikiewicz, 2021). This diversity often leads to inconsistent and occasionally contradictory findings (Mikiewicz, 2021). The lack of a consensus on how to measure social capital complicates the assessment of its social impact, rendering interpretations ambiguous and diminishing its perceived value (Bhandari & Yasunobu, 2009). Social capital consists of various components, such as social networks, shared beliefs, reciprocal norms, and community involvement, making it challenging to synthesize these elements into a coherent framework (Bhandari & Yasunobu, 2009; Field, 2008).

The gap in access to training and resources related to digitalization makes it difficult for MSMEs to utilize digital applications effectively. There is a significant skills gap in digital literacy and non-technical skills among MSME workers. Current training mechanisms frequently prove to be insufficient and lack broad accessibility, particularly for women and young entrepreneurs (Amaya et al., 2024; Haylemariam et al., 2024; Hoang et al., 2023). Continuous and continuous training programs are needed to address this gap (Aagaard, 2018; Prayoga et al., 2024). Not all MSMEs have the same access to a supportive community network, so they miss out on the opportunity to learn from the experience and best practices of using digital marketing applications. Among MSME workers, there is a real gap in digital literacy and non-technical skills. The training programs available are often inadequate and difficult to reach, especially for women and young entrepreneurs (Asare et al., 2015; Yadav et al., 2024). Consequently, it is essential to establish a sustainable and continuous training program to bridge this skills gap (Anggadini et al., 2023). Many Micro, Small, and Medium Enterprises (MSMEs) face challenges in adopting digital technology due to insufficient resources and support. This includes inadequate access to digital marketing tools, e-commerce platforms, and financial technology (Ausat & Peirisal, 2021; Gupta et al., 2022; Umami et al., 2023). The digital divide is still a significant obstacle that hinders overall digital transformation (Jamil, 2024). It is essential for MSMEs, government agencies, financial institutions, and educational institutions to work well together. Often, however, these relationships do not develop well, which limits MSMEs' ability to thrive and innovate (Umami et al., 2023)(Tereshchenko et al., 2024). Government politics and industrial cooperation are essential to address this (Mohammed Shebeen et al., 2024).

Some Micro, Small, and Medium Enterprises (MSMEs) exhibit uncertainty and resistance to the changes introduced by digitalization, which can be mitigated through social support and motivation. These enterprises frequently encounter challenges related to limited financial resources and legal issues that hinder their effective adoption of digital technologies (Bhandari & Yasunobu, 2009). Furthermore, a significant barrier to digital innovation is the inadequate availability of resources and organizational support (Field, 2008). The success of digitalization initiatives in MSMEs is closely linked to managerial competencies and technological preparedness, which encompass the ability to design and implement digital strategies. However, many MSMEs lack the necessary digital skills and managerial knowledge to facilitate this transformation (Yadav et al., 2024). Additionally, digital skills training and dissemination are often inconsistent or unsustainable, contributing to a gap in digital literacy among MSMEs (Anggadini et al., 2023; Asare et al., 2015).

The inadequacies of policies designed to foster social capital and collaboration among Micro, Small, and Medium Enterprises (MSMEs) can obstruct initiatives aimed at enhancing the adoption of digital applications within these businesses. Currently, there is no standardized method for assessing the effectiveness of policies intended to strengthen social capital within technical groups applicable to SMEs. The development of social capital and cooperative efforts is constrained by a limited policy framework, a lack of systematic exploration, and challenges in integrating social capital into institutional structures, highlighting the necessity for a comprehensive policy approach to facilitate effective policy development (Barbera, 2017; Gayathri, 2023; Halstead et al., 2022; Linares et al., 2011; Tresiana & Duadji, 2023). According to Social Capital Theory, social capital encompasses networks, norms, and beliefs that enable collaboration and interaction among individuals. In the context of MSMEs, insufficient understanding of social capital may impede their ability to establish networks that are vital for supporting technology adoption. Social capital encompasses the relationships and networks that individuals or groups possess, which can facilitate access to resources, information, and support. In the context of Micro, Small, and Medium Enterprises (MSMEs), social capital is crucial for fostering collaboration and innovation (Maurer et al., 2011; Setini et al., 2020). A robust network can offer both moral and practical support in the implementation of technology; however, if MSMEs do not fully comprehend how to leverage social capital, they may miss out on assistance from partners or community members during their transition to new technologies (Berkman & Wilson, 2021; Maurer et al., 2011). *Diffusion of Innovation Theory* explain how innovations, including digital technologies, are adopted in a group. Important insights into how digital technologies can be embraced in a group (El-Gohary & Eid, 2012; Rodríguez-Peña, 2021). Understanding these dynamics can help stakeholders in planning strategies to increase innovation adoption among MSMEs and society in general (Kim & Kang, 2023; Odeibat, 2023). By understanding these dynamics, stakeholders can design effective strategies to drive innovation adoption among MSMEs and society at large.

Trust and Collaboration Theory, this theory highlights the importance of trust in building collaboration between business actors. Without a good understanding of social capital, MSMEs may struggle to build trust in their networks, which in turn influences their decision to adopt technology. Trust is the key foundation in effective collaboration. When business people trust each other, they are more likely to share information, resources, and experiences (Odeibat, 2023). Strong social capital allows MSMEs to build mutually beneficial relationships (Babolian Hendijani & Jaszus, 2024; Desai, 2023). Without a good understanding of how to build social capital, MSMEs may not be able to establish good relationships with partners or customers (Shahzad et al., 2023). Low trust can make MSMEs hesitant to adopt new technologies, as they may be worried about risks or lack of support from their network (Ali et al., 2022; Gao, 2023). This uncertainty can hinder innovation and growth(Shahzad et al., 2023). A network of mutual trust can speed up the process of technology adoption, as businesses feel safer to experiment and invest in new technologies that can improve efficiency and competitiveness (Boukr et al., 2021; Leite, 2023; Sastararuji et al., 2022). The Theory of Planned Behavior, developed by Ajzen, posits that an individual's intention to engage in a particular behavior is shaped by their attitudes, subjective norms, and perceived behavioral control. In this context, comprehending the concept of social capital can significantly influence Micro, Small, and Medium Enterprises (MSMEs) attitudes toward adopting digital applications (Aboalganam et al., 2024; Zaheer et al., 2024).

In the context of MSMEs, strong relationships in social networks can help understand and adopt digital applications more effectively. In the context of MSMEs, building strong relationships in social networks can be strengthened through various approaches. One of them is by organizing training and workshops that focus on the use of digital applications, involving experienced practitioners to share knowledge (Tariq et al., 2024). In addition, creating a community or discussion forum on social media can facilitate the exchange of experiences and challenges between MSMEs (Vu et al., 2023). Mentoring programs can also be an effective solution, where more experienced MSMEs guide others in the process of technology adoption (Lee & Hallak, 2020). Providing access to resources such as practical tools and guides is also important, so MSMEs feel better prepared to adapt (Key, 2017). Partnerships with technology providers can help offer discounts or free trials, encouraging more MSMEs to try digital applications. Ultimately, conducting regular evaluations and soliciting feedback will enhance the understanding of the progress and needs of Micro, Small, and Medium Enterprises (MSMEs), enabling the implementation of more targeted and effective strategies to support them (Ghazwani & Alzahrani, 2024; Hoang et al., 2023; Liu et al., 2023). This study introduces a dynamic environment as a moderating factor and the use of digital marketing applications as a mediating factor. A dynamic environment encompasses rapid changes in market conditions, technology, consumer behavior, and other external influences that can impact the operations and business strategies of Micro, Small, and Medium Enterprises (MSMEs). Digital marketing applications refer to a range of tools and platforms utilized for online promotion of products and services, including social media, search engine optimization (SEO), email marketing, and digital advertising. This research

aims to elucidate how social capital can influence the adoption of digital technologies among MSMEs, a topic often underexplored in previous studies, while also identifying strategies that government and related institutions can employ to enhance the utilization of digital applications in MSMEs through the leveraging of social networks and community engagement. Additionally, it is anticipated that this research will serve as a foundation for future investigations into the interplay between social and technological factors in the context of MSMEs, as well as their broader implications for economic development. Thus, the primary objective is to identify and analyze the impact of social capital on the utilization of digital applications by MSMEs.

2. Research Method

This study employs quantitative methods to examine the factors influencing technology adoption among Micro, Small, and Medium Enterprises (MSMEs). Conducted over a one-year period, the research targeted MSMEs in the food, fashion, and technology sectors within Bali Province. A total of 200 MSMEs that have either utilized or intend to utilize digital applications in their operations participated in the study.

Data collection involved administering questionnaires to MSME respondents in Bali, which were specifically designed to gather insights regarding technology adoption and the understanding of social capital. The responses were categorized based on the following criteria: (1) MSMEs with a workforce of 1 to 10 employees, (2) MSMEs that have been operational for at least one year, and (3) MSMEs demonstrating a commitment to adopting digital technologies.
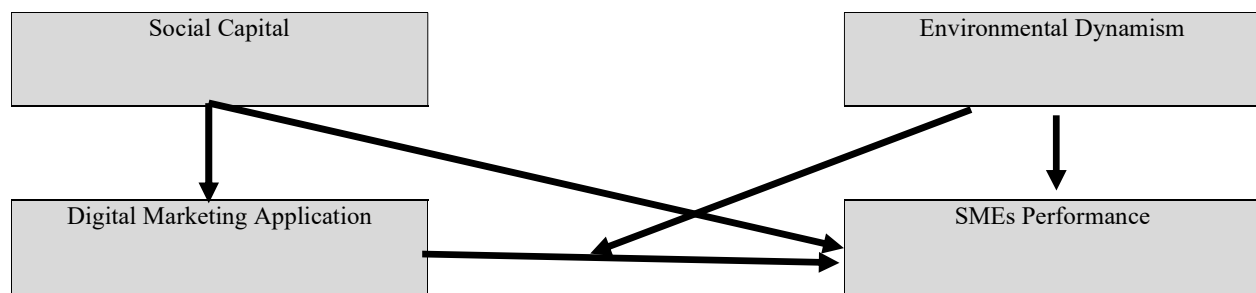

Fig. 1. Research Concept Framework

The categorized data is subsequently analysed using Path Analysis, incorporating both descriptive and inferential statistics. This analytical process is conducted with the assistance of AMOS software to uncover patterns and relationships among the studied variables. The findings are presented in the form of tables and descriptive summaries to offer a comprehensive overview of the research outcomes. Below is the conceptual framework for the study.

3. Results and Discussion

3.1 Characteristics Respondent

The sample comprised a higher number of female respondents than male, totalling 120 women and 40 men. Respondents' ages varied from 25 to 45 years, with the following distribution: 16 individuals under 25 years, 60 individuals aged 30 to 35, and 60 individuals aged 36 to 45. Additionally, 24 respondents were over the age of 45. All participants were business owners, with 96 individuals (60%) employing between 1 to 3 staff members, while 64 individuals (40%) had more than 5 employees.

3.2 Findings from the analysis using PLS-SEM

This study employs a two-stage approach to assess the model prior to hypothesis testing, aiming to ensure the validity and reliability of the research framework. The initial stage consists of a convergent validity analysis, which is subsequently followed by a discriminant validity analysis.

Uji Outer Model

Convergent Validity

The outer model test is conducted to verify that the research indicators are effectively utilized in measuring the studied variables. For a model to be deemed valid for research purposes, it must satisfy three criteria: (1) all loading indicators should exceed 0.65, (2) the Composite Reliability (C.R.) value must be greater than 0.8, and (3) the Average Variance Extracted (AVE) for each construct should surpass 0.5.

Table 1
Path Analis Result

	Indicator	Outer Loading	Composite Reliability	Average Variance Extracted (AVE)
Environmental Dynamism	m1	0.914	0.946	0.784
	m2	0.834		
	m3	0.890		
	m4	0.875		
Social Capital	x1	-0.189	0.832	0.527
	x2	0.754		
	x3	0.696		
	x4	0.804		
	x5	0.853		
	x6	0.838		
Digital Marketing Application	y1	0.951	0.921	0.689
	y2	0.941		
	y3	0.773		
	y4	0.895		
SMEs Performance	y5	0.853	0.810	0.666
	y6	0.854		
	y7	0.853		
	y8	0.736		

As presented in Table 1, certain outer loading indicators exhibit values below the acceptable threshold of 0.65, which should ideally range from 0.65 to 0.95. Consequently, some indicators do not meet the recommended standard. The Composite Reliability (CR) values, however, range from 0.80 to 0.946, all exceeding the benchmark of 0.8, thereby indicating strong consistency within the constructs as a research model. Furthermore, the Average Variance Extracted (AVE) values are all above 0.5, ranging from 0.527 to 0.784. Therefore, it can be concluded that the research model employed in this study demonstrates good validity.
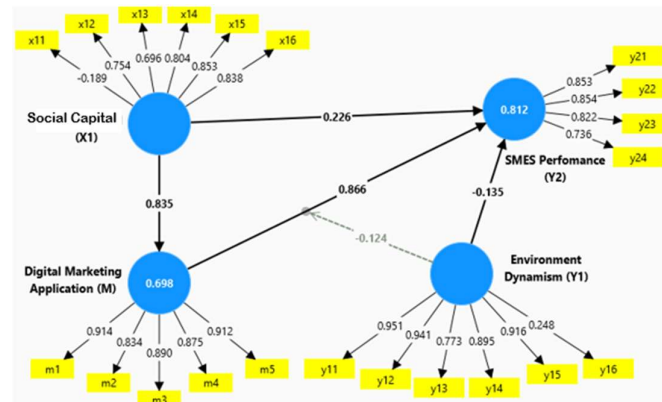

Fig 1. Output Pls Algorithm

Table 2
Results of Path Analysis

Effect	Original Sample	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (T/STDEV)	P Values
M → Y2	0.866	0.890	0.092	9.447	0.000
X1 → M	0.256	0.024	0.034	34.554	0.000
X1 → Y2	0.949	0.979	0.079	12.066	0.000
Y1 → Y2	-0.135	-0.151	0.081	1.681	0.140

Effect	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (T/STDEV)	P Values
X1 → H1 → Y2	0.723	0.744	0.075	9.652	0.000

Hypothesis testing was performed utilizing t-statistics and p-values, where a hypothesis is accepted if the p-value is less than 0.05. The analysis results indicate that social capital significantly influences the performance of Micro, Small, and Medium

Enterprises (MSMEs), evidenced by a t-statistic of 12.066 and a p-value of 0.000. This leads to the acceptance of H1, suggesting that higher levels of social capital correspond to improved MSME performance. Additionally, the effect of social capital on digital marketing applications is reinforced by a t-statistic of 34.554 and a p-value of 0.000, thereby supporting the acceptance of H2. This implies that increases in social capital are positively correlated with advancements in digital marketing applications among MSMEs. Furthermore, digital marketing applications are shown to positively impact MSME performance, as indicated by a t-statistic of 9.447 and a p-value of 0.000, resulting in the acceptance of H3. This finding demonstrates that enhanced usage of digital marketing contributes to the growth of MSMEs. Conversely, the dynamic environment does not significantly affect MSME performance, with a t-statistic of 1.681 and a p-value of 0.140, leading to the rejection of H4. This indicates a lack of relationship between dynamic environmental factors and improvements in MSME performance.

3.3 Dynamic Environment Moderation

The relationship between digital marketing applications and MSME performance in dynamic environment moderation, the analysis shows that the total influence is -0.124, meaning that digital marketing applications may not contribute positively to the performance of MSMEs in dynamic environmental conditions. On the other hand, there could be other factors that hinder this performance. The changing environment can affect the effectiveness of digital marketing strategies. For example, if the market is highly competitive or fast-changing, the digital marketing application used may not be adaptive enough to deliver good results. MSMEs may need to evaluate and adjust their digital marketing strategies to better suit current market conditions. This could include increased innovation, a better understanding of customer needs, or more effective use of digital tools.

3.4 Mediation of Marketing Digital Applications

The analysis of the relationship between social capital and Micro, Small, and Medium Enterprises (MSME) performance, mediated by digital marketing applications, reveals a total influence of 0.723. This indicates that digital marketing applications serve as a mediating factor that enhances the improvement of MSME performance.

4. Discussion

4.1 Social Capital and SMEs Performance

Many Micro, Small, and Medium Enterprises (MSMEs) lack a comprehensive understanding of the concept of social capital and its impact on their capacity to adopt digital applications. Therefore, organizing educational events focused on social capital is essential to elucidate its definition, benefits, and the ways in which social relationships can enhance marketing performance. Provide continuous assistance for MSMEs to help them apply the concept of social capital in their daily practices. Encourage MSMEs to collaborate on marketing projects that use digital applications. This cooperation can increase trust and strengthen social networks. Establish partnerships with institutions focused on MSME development to get additional support and resources. Create a digital platform that allows MSMEs to interact, share information, and learn from each other. Introduce an application that facilitates collaboration and communication between MSMEs to facilitate the exchange of ideas and practices. Conduct a survey to evaluate MSMEs' understanding of social capital and its impact on digital marketing. Gather feedback from participants to improve existing programs and adapt them to their needs.

4.2 Social Capital and Digital Marketing Applications

Not all MSMEs have the same access to a network of supportive communities, so they miss out on the opportunity to learn from the experience and best practices of using digital marketing apps Host workshops on digital marketing, where MSMEs can learn about the tools and techniques available. Collaborate with government agencies, universities, or NGOs that have support programs for MSMEs. Encourage collaborative projects involving multiple MSMEs to learn from each other. Help MSMEs gain access to a stable internet and the necessary tools for digital marketing.

4.3 Digital Marketing Applications and SMEs Performance

The gap in access to training and resources related to digitalization makes it difficult for MSMEs to utilize digital applications effectively. Host affordable and accessible training, both offline and online, to teach basic digital skills and the use of digital applications. Develop a training curriculum that suits the needs of MSMEs, including digital marketing, social media management, and the use of other digital tools. Create a mentoring program that connects MSMEs with experienced mentors in the field of digitalization. Offer recommendations for digital applications that are affordable and in accordance with the scale of MSME businesses.

4.4 Environmental Dynamism dan SMEs Performance

There is uncertainty and resistance among some MSMEs to the changes brought about by digitalization, which can be overcome through social support and motivation Building local communities or networks of entrepreneurs that encourage collaboration and experience sharing among MSMEs. This community can include business people who have successfully implemented digitalization and are willing to share best practices, where by organizing regular events such as seminars, workshops, or discussion forums that allow community members to share challenges and solutions related to digitalization. Create a mentoring program where more experienced business actors help the less experienced, thereby creating an environment that supports and motivates each other. It is imperative to provide training tailored to the specific needs of Micro, Small, and Medium Enterprises (MSMEs), equipping them with access to the digital resources essential for adapting to change. Additionally, initiatives should be established to facilitate access to the necessary technology and software, along with technical support, thereby enhancing MSMEs' confidence in their transition to digitalization.

4.5 Dynamism Environmental Mediator to drive Digital Marketing Applications and SMEs Performance

The limitations of policies aimed at fostering social capital and collaboration among Micro, Small, and Medium Enterprises (MSMEs) can impede efforts to enhance the adoption of digital applications within these businesses. To address this challenge, it is essential to build an innovation ecosystem that connects MSMEs with various stakeholders, including government agencies, educational institutions, and non-governmental organizations, to facilitate collaboration and the adoption of digital technologies. Key steps in this process include organizing discussion forums, developing joint training programs, creating digital collaboration platforms, providing incentives for collaboration, and implementing periodic monitoring and evaluation.

5. Conclusion

This study demonstrates that social capital plays a crucial role in promoting the use of digital applications among Micro, Small, and Medium Enterprises (MSMEs). Social capital, encompassing relationships, networks, and trust among business actors, is significant in facilitating access to and the adoption of digital technologies. MSMEs with robust social networks tend to adopt technology more swiftly, innovate effectively, and enhance their business performance. The analysis indicates that developing programs to encourage collaboration and strengthen social networks among MSMEs is highly recommended to support the digitalization process. Furthermore, there is a pressing need for ongoing training and improved access to digital resources to address existing skills gaps. The active involvement of local communities and business associations can provide substantial support for MSMEs in their adoption of digital technologies, thereby enhancing their competitiveness in the market. The study concludes that a deeper understanding of social capital and its practical application is essential for MSMEs to succeed in the digital transformation journey. Thus, prioritizing the development of social capital emerges as a key strategy for growth.

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