African Journal of Applied Research
Vol. 11, No. 2 (2025), pp.571-586
http://www.ajaronline.com
https://doi.org/10.26437/ajar.v11i2.1064
Received: November 12, 2024
Peer reviewed: February 20, 2025
Revised: March 15, 2025
Published: May 2025

LEVERAGING TECHNOLOGY FOR SUSTAINABLE GROWTH AMONG SMALL ENTERPRISES IN THE UPPER WEST REGION OF GHANA

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ABSTRACT

Purpose: The purpose of this study is to investigate the adoption and use of technology by Micro, Small and Medium Enterprises (MSMEs) for competitiveness and successful entrepreneurship.

Design/Methodology/Approach: This study explored the extent of social media adoption and use, as well as its impact on MSME performance in the Upper West Region of Ghana. The snowball sampling technique was used to identify participants. A total of nine owners participated in face-to-face, in-depth interviews on the adoption and use of technology in their respective fields. This study adopted a qualitative, inductive content analysis phenomenological approach to describe the lived experiences of MSME owners/managers who use social media platforms to conduct business transactions. A thematic analysis technique was used for data analysis.

Research Limitation: A relatively small number of owner-participants size was used for the study, covering only the Upper West Region of Ghana. This may suggest the possibility of occurrence beyond the Region's boundary.

Findings: The findings, among other things, indicated that the use of technology has a positive effect on the performance of MSMEs in the study area. The use of social media platforms increased their competitiveness and profitability. The findings further revealed that compatibility, ease of use, data costs, and the acquisition of technological devices are major factors determining their adoption.

Practical Implication: With the effective adoption of digital platforms for commercial transactions, in a practical sense, service delivery and payment methods will transcend the physical barriers of personal contact, thereby making transactions more accessible.

Social Implication: The social implications could result in higher incomes for business owners and increased engagement of unemployed youth in profitable ventures. The youth would also become inspired by the clear evidence of growth witnessed within the MSMEs locally.

Originality/Value: It, therefore, holds its originality in exploring its adaptation to the geographical location.

Keywords: *Adoption. competitiveness. digital technology. digital transformation. performance*

ISSN: 2408-7920

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INTRODUCTION

The crucial role of digitalisation as a driver of competitiveness and efficiency within the MSMEs sector is well documented by scientific research (Magambo, Nyamwesa & Mgulunde, 2023; Ardolino, Rapaccini, Saccani, Ghirardelli, Crespi & Ruggeri, 2018; Hinings, Gegenhuber & Greenwood, 2018; Nambisan, Lyytinen, Majchrzak & Song, 2017) and policy-related surveys of the European Commission, which demonstrated that 96% of business leaders consider digital technologies to be critical for innovative development and continuous, quality economic growth for MSMEs(European Commission 2014). This is also supported by the findings of Adobe (2016), which show that businesses that invest in creativity experience increased employee productivity by 78%, satisfied customers by 80%, a better customer experience by 78%, foster innovation by 83%, and are financially successful by 73%.

As key contributors to economic growth and employment in developing countries, MSMEs have a significant influence on poverty reduction and social mobility (World Bank, 2023). However, these enterprises, especially in rural and under-resourced regions such as the Upper West Region of Ghana, often encounter considerable barriers to technology adoption, including limited digital infrastructure, insufficient technical expertise, and constrained financial resources(Owusu and Adu-Gyamfi, 2022). Addressing these challenges could transform MSMEs' performance by enhancing their operational efficiency, expanding market access, and fostering resilience in a competitive global economy.

The adoption and use of E-commerce and social media platforms are considered to provide substantial benefits to businesses, particularly small ones (Sin, Osman, Salahuddin, Abdullah, Lim, & Sim, 2016; Jahanshahi, Zhang, & Brem, 2013). Fatta et al. (2018) argued that the restricted availability of technologies and resources prevents small and medium-sized enterprises that could have benefited from developed entrepreneurial processes that disseminate digital technologies from flourishing and becoming primary growth drivers in emerging economies. According to Ali et al. (2019) and Srinivasan and Venkatraman (2018), SMEs can also achieve successful corporate digital entrepreneurship through digital technology by developing their entrepreneurial processes and practises if they can adopt modern technology such as artificial intelligence and integrated customer relationship management (CRM) systems strategically.

Generally, the literature reveals that SMEs that adopt and utilise internet technology improve profitability and internal operations, enhance their products through faster communication with clients, and better promote and distribute their products and services (Magambo et al., 2023). According to the Broadband Commission (2020), there are numerous advantages to digital technology adoption, including economic development and country development, such as ensuring welfare, reducing poverty, removing intermediaries between producer and customer, increasing

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the number of entrepreneurs, rapid access to products by customers, timely responses to consumer wants and needs, benefiting from global markets, employing quality workers in operations, and increasing entrepreneur profits.

Digitalisation has generated discussions in almost every sector of the global economy, as well as in the Ghanaian economy. Nonetheless, the digital readiness, adoption, and use of technology among the MSME sector in Ghana, especially in the Upper West Region, remain to be established. This study explores the extent of the adoption and use of social media technologies and its effect on the performance of MSMEs in the Upper West Region of Ghana.

Recent studies have underscored the transformative potential of digital tools, such as mobile payments, e-commerce, and digital marketing, for MSMEs, highlighting that digital adoption enables enterprises to improve customer engagement, streamline supply chains, and access broader markets (Amoako et al., 2024; Nyarko & Boateng, 2021). For MSMEs in Ghana's Upper West Region, understanding the current level of technology utilisation and its impact on business outcomes is essential for informed decision-making. Moreover, examining factors influencing technology adoption, such as the availability of technical support, affordability, and perceptions of technology's relevance, provides valuable insights for crafting effective interventions to promote sustainable MSME growth.

The primary problem facing micro, small, and medium-sized enterprises (MSMEs) in the Upper West Region of Ghana is the limited adoption and utilisation of technology, which significantly hampers their performance and growth. Studies have shown that MSMEs in developing regions often struggle with integrating technology due to barriers like inadequate infrastructure, lack of digital skills, and limited financial resources, which restrict their ability to improve productivity, enhance competitiveness, and access broader markets (Quaye et al., 2014; Abor & Quartey, 2010). Addressing these issues is essential for improving the sustainability and economic contribution of MSMEs in Ghana.

This study examines the impact of technology adoption and utilisation on the performance of Micro and Small Enterprises (MSMEs) in the Upper West Region of Ghana. Through an analysis of factors affecting technology uptake, utilisation patterns, and performance outcomes, this research provides policymakers and stakeholders with critical insights to support MSMEs and advance economic growth and social development in the region.

The remainder of the paper addresses the theoretical and conceptual issues, followed by a discussion of the methodology, analysis, and conclusions, as well as recommendations for future studies.

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THEORETICAL FRAMEWORK OF TECHNOLOGY ADOPTION

The adoption and use of technology are grounded in theories in the literature. This study was based on the innovation diffusion theory of Everett Rogers in 1962. The perceptiveness of this theory in explaining the applications of innovation has widely informed academic disciplines(Sonnenwald et al., 2001; Agarwal et al., 2000; Possas et al., 1996). Diffusion of innovation is the process by which potential adopters perceive an object, concept, or behaviour as a novel creation and determine whether to embrace it or reject it based on beliefs they developed about it over time (Valente & Rogers, 1995). According to Porter (1990) the distinctive characteristic of innovation is achieving a significant competitive advantage that optimises the structure of an organisation as the primary mover of innovativeness by incorporating low-cost strategies or enhancing the distinctiveness of products.

Moreover, technology adoption among MSMEs is often examined through established theoretical frameworks, such as the Technology-Organisation-Environment (TOE) framework and the Unified Theory of Acceptance and Use of Technology (UTAUT). These models explore the organisational and external factors that influence technology adoption within enterprises (Mensah et al., 2021). In Ghana, Mensah et al. (2021) emphasised that MSMEs require not only technical infrastructure but also organisational support to implement and utilise digital tools effectively. Similarly, Nyarko and Boateng (2021) applies the Diffusion of Innovations theory to explore how MSMEs in rural areas, such as Ghana's Upper West Region, are often influenced by peer networks, with adoption rates increasing as technology is integrated within their communities.

To attain a competitive edge, Huda and Noviaristanti (2023) highlighted that the decision to adopt innovative technology is a process that develops over time and entails several steps, which Roger's innovation diffusion theory centres on. Rogers postulated five significant innovation characteristics that are the determinants of technology adoption: relative advantage, compatibility, complexity, trialability, and observability (Yuen et al., 2020; Rogers, 2010). The relative advantage refers to the perceived benefits and advantages that users expect to gain from adopting an innovation compared to existing alternatives (Sonnenwald et al., 2001). When an innovation is perceived to offer significant improvements, such as cost savings, increased efficiency, or better performance, it enhances the likelihood of adoption (Xiao & Su, 2022).

Compatibility addresses the extent to which innovation aligns with the existing values, needs, and practises of potential adopters (Shirowzhan et al., 2020). In this case, if innovation is compatible with users' current systems, routines, or values, it is more likely to be adopted (Aizstrauta et al., 2015). Complexity refers to the perceived difficulty or complexity associated with understanding and using innovation (Steiber et al., 2020). Innovations that are perceived as simple, easy to understand, and useful are more likely to be adopted (Ibrahim et al., 2015). Users often prefer

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innovations that do not require extensive training, technical knowledge, or significant adjustments to their current processes (Zhu et al., 2006).

Trialability represents the extent to which users can experiment with or try out the innovation on a limited basis before fully committing to its adoption (Emani et al., 2018). When users have the opportunity to test innovation and experience its benefits firsthand, they can assess its value more accurately (Atkin et al., 2015). Trialability reduces perceived risks and uncertainty, thereby increasing the likelihood of adoption (Mamun, 2018). Observability refers to the visibility of the results or benefits of the innovation to others (Pathak et al., 2019). If the positive outcomes of adopting the innovation are visible and can be easily observed by others, it creates social proof and influences potential adopters' decisions (Nazari et al., 2013).

From Roger's characterisation, it is evident that the acceptance of innovation will be subject to the rigour of adopters' contention of whether to use or not to use the innovation (Wani & Ali, 2015). Given the scepticism over the adoption of innovation, Rogers proposed five stages of technological acceptance: innovators, early adopters, early majorities, late majorities and laggards. Ibrahim et al. (2015) argued that regardless of the nature and traits of individuals, the features inherent in an innovation affect its adoption rate in society. Technologically innovative approaches that MSMEs could leverage to streamline their operations to achieve competitive advantage include E-commerce Platforms, Mobile Apps, customer relationship management (CRM) systems, cloud computing, digital payment, data analytics, and automation and robotics (Deleon Frisnedi et al., 2022; Pramod et al., 2023; Singh, 2019).

The adoption of digital technology will enable small enterprises to leverage technology to accelerate their business operations significantly, contribute to industrial growth, and enhance the integration of economic sectors for the development of the entire economy (Huda & Noviaristanti, 2023). Bagale (2014) stressed that government policies are a critical factor in the adoption of digital technology. When the government initiates legitimate and supportive measures to safeguard an enabling environment that allows small businesses to thrive in a technologically advancing society, the rate of adoption by enterprises and their customers increases, leading to a more friendly business environment (Bagale, 2014).

METHODOLOGY

From the literature review, a phenomenological approach was adopted in the study. The objective was to explore the digital readiness of micro, small, and medium-scale enterprises (MSMEs) within the cyberspace of the Upper West Region. The study adopted a snowball sampling technique to identify the study participants. "One-on-one" in-depth interviews were conducted on

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the adoption and use of digital technologies in entrepreneurial activities by entrepreneurs in the region. Each interview was conducted individually, allowing researchers to ask follow-up questions and collect additional data as needed. The One-on-One Interview method can be conducted in person or over the phone and usually runs 30 minutes to 2 hours or longer per respondent.

Face-to-face in-depth interviews provide better opportunities to understand respondents' body language and match their responses. This method helps researchers find in-depth data from participants, which is simply conversational. The benefit of this approach is the excellent opportunity it offers to acquire precise information about people's beliefs and motivations. This study describes the lived experiences of MSMEs using digital technologies to execute their businesses. It was not concerned with deepening understanding of a given problem. Hence, the researchers used qualitative methodology, as the study seeks to employ phenomenology to understand the context, describe the behaviour and beliefs, recognise the processes, and explore the participants' lived experiences (Batac et al., 2021). The qualitative thematic analysis technique Braun and Clarke (2006) generally employed in the study of field-transcribed data was applied.

This method produces in-depth and illustrative information to understand different dimensions of the problem under analysis. Hence, it is concerned with aspects of reality that cannot be quantified, focusing on the understanding and explanation of the dynamics of social relations (Queirós et al., 2017). This study referred to the respondents as "participants" as they shared their experiences through in-depth, face-to-face interviews. The researcher limited the number of participants to 9 to enable the collection of sufficient information rather than statistical significance. The open coding technique was employed for organising the data for qualitative analysis.

FINDINGS

To explore the digital presence of MSMEs in the Upper West region

This objective has the advantage of reflecting the use of digital technologies for an organisation's internal matters and also external relationships with clients, suppliers and administrators. Furthermore, the use of a website reflects a costlier and thus riskier use of the Internet, depending on the nature of the firm's activities, the intensity of the competition environment, and external support for the adoption of such technologies.

The Upper West Region's economy is dominated by micro, small, and medium-sized enterprises (MSMEs), which are primarily concentrated in low-productivity sectors, such as manufacturing, wholesale, and retail trade, accounting for 78% of the total workforce. Individually, the majority

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of SMEs have fewer than five employees, with only three out of nine respondents having more than five employees in their firms.

The majority of respondents have been in operation for 5 years or more, while the rest, representing 4 out of 9 respondents, have been in business for less than 5 years. Categorically, 7 out of the 9 respondents are involved in farming practices such as animal farming and crop farming. One respondent, out of the remaining two, undertakes manufacturing practices, including fashion design, while the last respondent works in retail services, specifically as an agrochemicals seller.

Furthermore, six out of the nine respondents intended to adopt digital technology in their operational processes, while the remaining 3 had no intention of doing so. Of these respondents, 5 had a basic level of IT training or higher, while the minority of 4 had no basic level of IT training.

According to respondent 1, businesses have adopted digital technology in their firm's internal functioning in the past few years. *He stated that the use of digital tools, such as the Pig+App, has assisted him in performing various tasks on his farm, including feeding, breeding, medication, and even vaccination. He also uses WhatsApp, Facebook, YouTube, and SMS services to easily market and reach out to his customers. Payments to suppliers and customers are faster when he uses the mobile money payment system. He occasionally uses MTN Mobile Money sometimes, but primarily Vodafone Cash Services is what he uses most often because of its minimal charges.*

As for the second respondent, the business has not adopted the use of digital technology in its inner functioning since he started. He further stated,
"I am still using the traditional form of pig farming." I do not have a computer or IT skills. Although I have a smart mobile phone, it is used solely for personal purposes. The third respondent confirmed the use of digital technology in the firm's operations over the past three years. He mentioned that digital apps, such as weather forecast apps, assist me in planning my farming activities according to the weather conditions. I also use WhatsApp, Facebook, YouTube and SMS services to easily market and reach out to my customers. Payments to suppliers and customers are also faster when I use the mobile money payment system.

The fourth respondent also insisted on the use of digital technologies within the firms' internal operations for the past two years. According to him,
"I use Google search and online videos to learn a great deal about various farming practices, such as planting times, distances, estimated yields per plant, and when to apply fertiliser, among others". The weather forecast app assists me in planning my farming activities according to the weather conditions. I also use WhatsApp, Facebook, YouTube, and SMS services to easily market

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and reach out to my customers. Payments to suppliers and customers are also faster when I use the mobile money payment system.

As for the fifth respondent, the business has not adopted the use of digital technology in its inner functioning since she started. She further stated,

"I do not see the need." I do not have any IT knowledge or equipment to use for that.

"Six respondents said YES

..I can record my transactions faster and more efficiently. I can also advertise my designs on WhatsApp, Facebook, and other digital platforms with very minimal cost. Contrarily to respondent 6, respondent 7 said, "No, due to the lack of IT equipment and skills." I record all my business transactions in books or hard copies. The eighth respondent also responded "YES" to the question. He further stated that the firm has used digital technology for the past four years. He said, "The use of digital tools assists me in doing many things on my poultry farm." I can search for whatever information I need on poultry, from feeding to medication. I also use WhatsApp and Facebook. YouTube and SMS services to easily market and reach out to my customers. Payments to suppliers and customers are also faster when I use the mobile money payment system. I use MTN MoMo sometimes, but primarily Vodafone Cash Services, which is what I use most often because of its minimal charges. This is contrary to the response of the last respondent, who stated that the business has not adopted the use of digital technology in its production processes since it does not have any knowledge of digital devices and their usage.

The majority of participants (6) affirmed that the high cost of internet data is the most significant challenge among other challenges highlighted concerning the use of digital technologies. The introduction of government fiscal policies, such as the E-levy, has also instilled fear in the adoption of the electronic mode of transaction (e.g., MoMo). A few respondents stated that the poor quality of internet reception also poses a challenge to the use of digital technology.

According to the respondents, their perceived potential risks in the use of digital technologies for their businesses are:

1. The fear of losing data in case the cell phone gets lost or damaged.
2. The fear of internet fraudsters, particularly with the use of mobile money and
3. The fear of internet errors, which may cause loss of data.

Discussion

The findings on the operational tenure and business activities of MSMEs in the Upper West Region of Ghana provide insights into the structure and stability of these enterprises. The data show that most respondents have been in business for over five years, indicating a level of resilience and potential market adaptation. The longevity in operation suggests that these MSMEs may have developed local networks and customer bases to support their continuity, even in a challenging

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economic environment (Amoako et al., 2024). Studies indicate that business tenure can also influence an enterprise's adaptability to market changes, where longer-standing businesses might have greater resources or familiarity with market dynamics than newer entrants (Owusu & Adu-Gyamfi, 2022).

The sectoral distribution of these MSMEs further reflects the economic profile of the Upper West Region, where agriculture plays a dominant role. With 7 out of 9 respondents involved in farming practises, such as animal and crop farming, the sector's primary focus on agriculture aligns with findings in other studies on rural economies in Ghana and Sub-Saharan Africa. According to Acheampong et al.(2022), agricultural MSMEs tend to be low-productivity enterprises with limited scalability, constrained by factors such as limited access to finance, inadequate infrastructure, and low technology adoption rates. This concentration in agriculture underscores the need for sector-specific interventions that enhance productivity and income generation among MSMEs.

The remaining respondents represent a minor but essential diversification in the MSME sector. One respondent engages in manufacturing, specifically fashion design, and another is involved in retail services as an agrochemical seller. These non-agricultural enterprises introduce some level of business diversity, which is critical for regional economic resilience (Andoh et al., 2023). Retail and manufacturing enterprises often have higher value-added potential than primary agricultural activities, and their presence indicates an emerging shift towards more diversified economic activities. However, the limited representation of manufacturing and retail MSMEs indicated that diversification remains low, possibly due to barriers like limited capital, technical expertise, and market access (Nyarko & Boateng, 2021).

The presence of an agrochemical retailer among respondents is particularly significant because it highlights a connection between the agricultural and retail sectors. Access to agrochemicals is essential for modernising farming practices, and retailers in this niche play a key role in improving agricultural productivity and crop yields. Asante and Oppong (2023) argued that access to agrochemicals access is a vital component for agricultural MSMEs seeking to adopt more productive practices, thus enhancing their overall contribution to the local economy.

Given the predominance of agriculture-focused MSMEs and the limited number of manufacturing and retail enterprises, policies aimed at supporting both agricultural productivity and sectoral diversification could be highly beneficial. Providing access to agricultural inputs, financial services, and training could boost productivity among farming MSMEs, while targeted support for emerging manufacturing and Policies that promote both agricultural productivity and sectoral diversification could be very helpful, especially considering the large number of MSMEs with an

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agricultural concentration and the small number of manufacturing and retail businesses. Access to training, financial services, and agricultural inputs could increase farming MSMEs' productivity, and focused assistance for new manufacturing and retail enterprises could promote economic diversification and strengthen the local economy's resilience and sustainability (World Bank, 2023). Policies that promote both agricultural productivity and sectoral diversification could be beneficial, especially considering the large number of MSMEs with an agricultural concentration and the small number of manufacturing and retail businesses. Access to training, financial services, and agricultural inputs could increase farming MSMEs' productivity, and focused assistance for new manufacturing and retail enterprises could promote economic diversification and strengthen the local economy's resilience and sustainability (World Bank, 2023). Retail businesses could foster economic diversification, enhancing the resilience and sustainability of the local economy(World Bank, 2023).

The interest in digital technology adoption by MSMEs in the Upper West Region reflects a growing awareness of the potential benefits that technology can bring to business operations. Six of the nine respondents expressed an intention to integrate digital technology into their processes, indicating a positive trend towards digitalisation within this MSME cohort. The adoption of digital tools in MSMEs is often associated with enhanced operational efficiency, expanded market reach, and improved financial management (Amoako et al., 2024). This is particularly important for MSMEs in low-productivity sectors, as digital technology can facilitate better resource management, streamline supply chains, and support customer engagement (Mensah et al., 2021). However, the remaining three respondents who did not intend to adopt digital technology highlight the barriers that still exist within the MSME sector. Studies on MSME digitalisation in Ghana and other developing economies point to factors such as cost constraints, lack of digital skills, and limited infrastructure as reasons for reluctance to adopt technology (Owusu & Adu-Gyamfi, 2022). For example, many MSMEs are constrained by financial limitations that prevent them from investing in technology, as well as a lack of awareness about the long-term benefits of digital adoption (Acheampong et al., 2022). This reluctance could also be due to a limited understanding of digital tools or perceived difficulty in integrating them into small-scale operations, particularly for those with no prior IT training.

The data further reveal that five respondents had at least a basic level of IT training, whereas four had no basic IT training. The presence of basic IT skills among the majority of respondents may be a driving factor for their willingness to adopt such technology. Research suggests that even minimal digital literacy can significantly enhance the likelihood of technology adoption in MSMEs (Nyarko & Boateng, 2021). According to Asante and Oppong (2023), a training programme in digital skills not only builds confidence but also reduces the perceived complexity of digital tools, making MSMEs more open to integrating them into their processes. Conversely, the lack of IT

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training among the four remaining respondents likely contributes to their reluctance to adopt digital technology, as studies demonstrate that digital skill gaps act as substantial barriers to technology adoption in MSMEs (Andoh et al., 2023).

Overall, these results suggest that digital literacy plays a crucial role in the adoption of technology by MSMEs. The findings support the idea that targeted training programs could enhance digital technology uptake by addressing knowledge gaps and reducing the apprehension associated with digital tools. Consequently, policy measures and training initiatives focused on improving digital skills among MSME owners and employees could help expand technology adoption in the Upper West Region, ultimately enhancing productivity and market access for these enterprises (World Bank, 2023).

Summary of Results

The digital transformation of MSMEs has created a landscape that encourages entrepreneurs to adopt technological innovations to stay current in their business operations. This study focused on the impact of technology adoption and its utilisation on the sustainability of micro, small, and medium-sized enterprises in the Upper West region of Ghana. The theories used address innovations during economic disruptions, such as effectuation, resilience, bricolage, and dynamic capabilities. This research applied qualitative inductive content analysis to explore the drivers and barriers to digital innovations in MSMEs" business operations.

CONCLUSION

In conclusion, the study of technology adoption and utilisation among Micro, Small, and Medium-sized Enterprises (MSMEs) in the Upper West Region of Ghana reveals critical insights into the current state and potential for enhancing business performance in this sector. The predominance of MSMEs in low-productivity areas, coupled with their significant role in the local economy, underscores the importance of fostering an environment conducive to technological integration.

The findings indicate a growing willingness among MSME owners to adopt digital technologies, with a majority of the respondents expressing intentions to incorporate such tools into their operations. However, barriers remain, particularly regarding the lack of digital skills and training for some entrepreneurs. Addressing these challenges through targeted training programmes, accessible technology solutions, and awareness initiatives will be essential for enhancing the productivity and competitiveness of these businesses. Moreover, the sectoral distribution of MSMEs highlights reliance on agriculture, suggesting the need for diversified economic activities that can contribute to greater resilience and sustainability. Policymakers and stakeholders must

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prioritise support mechanisms tailored to the unique needs of MSMEs across sectors to foster a more dynamic and robust economic landscape.

Ultimately, promoting technology adoption among MSMEs in the Upper West Region can lead to improved operational efficiency, increased market access, and enhanced economic growth. Continued research and investment in this area will unlock the full potential of MSMEs as key drivers of development in the region and beyond.

Policy Implication

These research directions will contribute to a deeper understanding of the dynamics of technology adoption in MSMEs, helping to inform policies and practises that support sustainable growth in the Upper West Region and similar contexts.

With the effective adoption of digital platforms for commercial transactions, in a practical sense, service delivery and payment methods will transcend the physical barriers of personal contact, thereby making transactions more accessible.

The social implications could result in higher incomes for business owners and increased engagement of unemployed youth in profitable ventures. The youth would also become inspired by the clear evidence of growth witnessed within the MSMEs locally.

Limitations and Future Research Direction

This study proposes three recommendations for future research on technology adoption and use among Micro, Small, and Medium-sized Enterprises (MSMEs) in the Upper West Region of Ghana:

Longitudinal Studies on the Impact of Technology Adoption

Future research should conduct longitudinal studies that track the impact of technology adoption overtime on the performance of MSMEs in the Upper West Region. This research can assess key performance indicators, such as productivity, revenue growth, and market expansion, before and after the implementation of digital tools. Understanding the long-term benefits and challenges of technology adoption will provide valuable insights for policymakers and stakeholders seeking to support MSMEs effectively.

Exploration of Sector-Specific Technology Needs

Research should be conducted to explore the specific technology needs and challenges faced by MSMEs across sectors (e.g., agriculture, manufacturing, and retail) in the Upper West Region. Sector-specific studies can help identify unique barriers to technology adoption and utilisation,

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enabling tailored interventions that address the particular circumstances and requirements of each sector. This focused approach will enhance the effectiveness of support programmes and initiatives aimed at fostering technology integration.

Assessment of Policy Frameworks and Support Systems

Future research could examine existing policy frameworks and support systems related to technology adoption by MSMEs in Ghana. This assessment should evaluate the effectiveness of current policies, funding opportunities, and training programmes, as well as their alignment with the needs of MSMEs in the Upper West Region. Identifying gaps and barriers within these frameworks will inform recommendations for enhancing support mechanisms, ultimately leading to more effective strategies for promoting technology adoption among MSMEs

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