INTERNATIONAL JOURNAL OF PROGRESS IN SOCIAL SCIENCES DEVELOPMENT
ISSN: 0000-0000 0000-0000 Volume 1, Issue 1, 2025

Impact of Generative AI Adoption on Micro and Small Enterprises in Emerging Economies

Gullalie Anum Khan*[1], Dr. Syed Mohsin Ali Shah[2], Dr. Silvia Ahmed[3],Rabia Majeed[4]

*[1]Assistant Director, Benazir Income Support Programme.
[2]Associate Professor, Department of Marketing and Entrepreneurship, Abdul Wali khan University Mardan
[3]Lecturer, Institute of Business and Leadership Abdul Wali Khan University, Mardan.
[4]Assistant Professor at Department of Economics, Abdul Wali Khan University, Mardan

[1]Ad.Waseela@bisp.gov.pk, [2]Syedmohsinali@awkum.edu.pk, [3]silviakhattak@awkum.edu.pk , [4]rabiaattas@awkum.edu.pk.

DOI: https://doi.org/10.64060/IJPSSD.v1i1.5

Keywords
Generative AI, Micro and Small Enterprises, Emerging Economies, AI Adoption, Business Performance, Productivity, Revenue Growth.

Article History
Received: 28 August 2025
Accepted: 15 October 2025
Published: 3 Novermber 2025

Corresponding Author: * Gullalie Anum Khan

Abstract
This study investigates the impact of generative artificial intelligence (AI) adoption on the performance of micro and small enterprises (MSEs) in emerging economies. As AI technologies continue to evolve, they present significant opportunities for MSEs to enhance efficiency, productivity, and customer engagement. However, MSEs in emerging economies often face challenges in adopting these technologies due to financial constraints, lack of technical expertise, and limited access to infrastructure. Using a quantitative approach, the study surveys 300 MSEs in India, Nigeria, and Egypt, examining the relationship between AI adoption and key business performance metrics such as revenue growth, productivity, and customer engagement. The results reveal a strong positive correlation between AI adoption and improvements in business performance, with high AI adoption associated with substantial gains in all three metrics. Regression analysis further confirms that AI adoption is a significant predictor of business success, explaining a large portion of the variance in performance outcomes. However, the study also identifies significant barriers to AI adoption, including financial limitations and technological readiness. These findings have important implications for both MSEs and policymakers, highlighting the need for supportive policies and initiatives to foster AI adoption in emerging economies.

1- INTRODUCTION

Micro and small enterprises (MSEs) form the backbone of emerging economies, contributing significantly to economic growth, job creation, and poverty alleviation. According to Soni (2023), MSEs account for over 90% of businesses in these economies, creating a substantial portion of employment and fostering innovation. However, these enterprises face numerous challenges, such as limited access to financial resources, inadequate infrastructure, and low technological adoption, which hinder their growth potential. The rapid advancement of digital technologies, particularly artificial intelligence (AI), has created new opportunities for MSEs to overcome these barriers. Generative AI, a

ISSN: 0000-0000 0000-0000 Volume 1, Issue 1, 2025

subset of artificial intelligence, encompasses machine learning models that generate content, automate processes, and assist in decision-making (Mannuru et al., 2025). These technologies hold the potential to revolutionize MSE operations by improving productivity, streamlining business processes, and enhancing customer engagement. The relevance of AI adoption for MSEs in emerging economies is increasingly becoming apparent as businesses seek to adapt to the digital economy and remain competitive in a rapidly evolving global marketplace.

Generative AI technologies are particularly transformative for MSEs due to their ability to automate repetitive tasks, provide predictive insights, and enable personalized customer interactions. For instance, AI can enhance marketing strategies through content generation, improve supply chain efficiencies with predictive analytics, and foster innovation by analyzing consumer behavior and trends (Mutanga et al., 2024). These capabilities allow small businesses to leverage the power of data, optimize operations, and gain a competitive edge in industries traditionally dominated by larger firms with more resources. The importance of studying AI adoption in MSEs in emerging economies cannot be overstated.

Generative AI's potential to drive innovation and efficiency in these enterprises is particularly crucial in the context of their growth and development challenges. As highlighted by García-Vidal et al. (2025), AI adoption patterns in MSEs vary significantly across regions, influenced by factors such as technological infrastructure, economic conditions, and cultural acceptance of digital tools. Understanding how MSEs in emerging economies perceive and adopt generative AI is essential for policymakers, researchers, and business leaders to design effective strategies that can maximize the benefits of AI for these enterprises. This study is timely and necessary, as it aims to fill a gap in the literature by examining how generative AI adoption influences the growth, performance, and sustainability of MSEs in emerging economies (Fajri et al., 2024). Furthermore, it will examine the role of human, technological, and market factors in moderating the impact of AI on MSEs' revenue growth.

1.2 Problem Statement

Micro and small enterprises (MSEs) are vital to the economies of emerging markets, contributing significantly to employment, innovation, and poverty reduction (Soni, 2023). However, these enterprises often face challenges such as limited access to technology, financial constraints, and lack of skilled labor, which impede their growth and sustainability. As emerging economies increasingly embrace digital transformation, generative artificial intelligence (AI) presents an opportunity to overcome these barriers, offering potential solutions for efficiency, innovation, and customer engagement (Fajri et al., 2024). Despite the growing interest in AI adoption, there is limited understanding of how generative AI specifically impacts MSEs in emerging economies, particularly in terms of business performance and revenue growth. Studies by García-Vidal et al. (2025) and Mutanga et al. (2024) highlight the gap in literature regarding the application of generative AI in these contexts. While research has explored AI adoption at a broader level, little attention has been given to understanding the specific barriers, drivers, and outcomes of AI integration for MSEs in resource-constrained environments (Mannuru et al., 2025). The problem remains that generative AI's potential to drive business growth, operational efficiency, and innovation is yet to be fully realized by MSEs in emerging economies, and a comprehensive understanding of its adoption dynamics is needed (Bapat et al., 2024). Therefore, this study seeks to address this knowledge gap and explore the practical implications of generative AI adoption for MSEs.

1.3 Objectives

The primary objective of this study is:

- ✓ To analyze the extent of generative AI adoption among MSEs in emerging economies.
- ✓ To examine the factors influencing the decision of MSEs to adopt generative AI technologies.
- ✓ To explore the role of human, technological, and market factors in moderating the

relationship between generative AI adoption and business outcomes.

1.4 Research Questions

The study addresses the following research questions:

- ✓ What are the main barriers and drivers of generative AI adoption among MSEs in emerging economies?
- ✓ How does generative AI adoption influence the revenue growth and operational efficiency of MSEs?
- ✓ What strategies can MSEs employ to effectively integrate generative AI into their operations?

1.5 Significance of the Study

This study focused on MSEs located in emerging economies, with a specific emphasis on regions such as Sub-Saharan Africa, Southeast Asia, and Latin America. These regions are characterized by a growing digital infrastructure and increasing governmental support for technology adoption, yet they still face significant challenges in terms of technological access, funding, and skills development (Mannuru et al., 2025). The geographical focus allows for a detailed analysis of how generative AI can be adopted in diverse cultural and economic contexts, reflecting the realities faced by MSEs in such environments.

Sectorally, the study examines MSEs across various industries, including retail, manufacturing, agriculture, and services. These sectors are often the most impacted by technological change, with small businesses seeking innovative ways to improve efficiency, reduce costs, and reach new markets. The research analyzes sector-specific challenges and opportunities related to AI adoption, providing a comprehensive view of the potential benefits and barriers in each industry. For instance, in the agricultural sector, generative AI could help MSEs optimize supply chains and improve crop management, while in retail, AI-powered marketing and customer service tools could enhance the customer experience and increase sales (Fajri et al., 2024).

While this study aims to provide valuable insights into the adoption of generative AI among MSEs in emerging economies, there are several limitations that must be acknowledged. First, the research rely on self-reported data from surveys and interviews, which may be subject to biases such as social desirability or misinterpretation of questions. Although efforts was made to ensure the reliability and validity of the data collection instruments, the potential for subjective responses remains a limitation. Second, the study focuses on a limited number of case studies, primarily drawn from regions where AI adoption is already underway. This may not fully capture the experiences of MSEs in countries with less developed digital infrastructure or those still in the early stages of AI adoption. Additionally, the sample size may be constrained by access to participants and resources, limiting the generalizability of the findings.

Finally, the research not delve into the technical aspects of generative AI technologies themselves but instead focus on their practical applications and impact on business performance. While this approach provides valuable insights from a business perspective, it may not fully address the technical challenges and innovations associated with AI systems. Despite these limitations, this study aims to provide a comprehensive understanding of how generative AI adoption can impact MSEs in emerging economies, with practical recommendations for businesses, policymakers, and future researchers.

2- Literature review

The Technology Acceptance Model (TAM), developed by Davis (1989), is widely used to understand how users come to accept and use new technologies. The model posits that perceived ease of use and perceived usefulness are the primary determinants of technology adoption (Davis, 1989). This framework has been applied in numerous studies, including those focused on the adoption of educational technologies (Han & Sa, 2022; Natasia et al., 2022). In the context of micro and small enterprises (MSEs), TAM provides a useful lens for understanding how business owners and managers perceive AI tools, and how these perceptions influence the decision to adopt generative AI technologies. For instance, Uula and Avedta (2023) examined the role of TAM in banking, highlighting that the model's focus on ease of use and usefulness is relevant for understanding the adoption of financial

ISSN: 0000-0000 0000-0000 Volume 1, Issue 1, 2025

technologies, such as AI-driven financial management tools, in small businesses. Similarly, in the educational sector, TAM has been instrumental in analyzing user satisfaction with online platforms, indicating that users' perceptions of AI-driven platforms can significantly influence their adoption (Han & Sa, 2022). These studies underscore the importance of perceived ease of use and usefulness in driving technology adoption, which can be translated into the adoption of generative AI in MSEs.

The Unified Theory of Acceptance and Use of Technology (UTAUT) is another theoretical framework that builds on TAM, incorporating additional factors such as social influence and facilitating conditions. UUTAT has been increasingly applied to understand technology adoption in diverse sectors, particularly for small businesses and emerging economies. According to Uula and Avedta (2023), the inclusion of social influence, how peers and influential figures impact an individual's decision to adopt technology, adds a layer of relevance for MSEs, where owner decisions may be influenced by market trends or advice from other entrepreneurs. UTAUT's inclusion of facilitating conditions, such as access to resources and infrastructure, is particularly important in emerging economies where MSEs often struggle with limited resources and technological support (Chen & Guo, 2024). García-Vidal et al. (2025) applied UTAUT to assess AI adoption in MSEs and found that social influence, facilitating conditions, and performance expectancy all played significant roles in determining the extent to which MSEs in emerging economies adopted AI technologies. This underscores UTAUT's relevance in understanding the complex decision-making process in these markets.

AI adoption among MSEs has been gaining traction globally, driven by the need to remain competitive in an increasingly digital economy. According to García-Vidal et al. (2025), MSEs are increasingly utilizing AI for various applications, such as process automation, customer engagement, and data-driven decision-making. However, adoption rates remain inconsistent across regions. In developed economies, where technological infrastructure and resources are more accessible, AI adoption has been rapid and more widespread (Bharadiya, 2023). However, in emerging economies, the pace of AI adoption in MSEs has been slower, with significant gaps in awareness, resources, and skills. Research by Adegbuyi et al. (2024) on Nigerian MSEs highlights that while AI adoption has the potential to drive growth, most small businesses face significant barriers, including high costs and limited technical expertise. Similarly, in Southeast Asia, AI adoption has been on the rise, but MSEs are often hesitant due to a lack of trust in technology and concerns about data privacy (Abuhassna et al., 2023). Despite these challenges, AI's potential to foster innovation and improve business processes has prompted many MSEs in emerging markets to begin experimenting with AI technologies.

There are several barriers preventing MSEs in emerging economies from fully adopting AI technologies. According to Rubab (2023), one of the main challenges is the high initial cost of implementing AI systems, which can be prohibitively expensive for resource-constrained businesses. This issue is compounded by a lack of skilled labor, as many small businesses struggle to find employees with the necessary technical expertise to implement and manage AI technologies (Bapat et al., 2024). In addition, García-Vidal et al. (2025) argue that cultural factors also play a role in hindering AI adoption, as some entrepreneurs in emerging economies view AI as a threat to traditional business practices. This resistance to change, fueled by fear of losing control over business operations, can significantly slow the adoption process. Furthermore, the lack of supportive policies and infrastructure to encourage AI adoption further exacerbates these challenges. As noted by Fitriyani (2024), while government initiatives to promote AI adoption are growing, they are often insufficient to overcome the barriers faced by MSEs, especially in less developed regions.

AI has the potential to significantly improve business performance by enhancing efficiency and productivity. Studies have shown that AI-driven automation can streamline repetitive tasks, allowing MSEs to focus on more strategic activities. For example, Abrokwah-Larbi and Awuku-Larbi (2024) found that AI technologies in small businesses in Ghana helped improve customer service by

ISSN: 0000-0000 0000-0000 Volume 1, Issue 1, 2025

automating responses to customer inquiries, which led to faster response times and greater customer satisfaction. Similarly, Rubab (2023) reported that AI applications in inventory management enabled MSEs to optimize stock levels, reducing operational costs and increasing profitability. Furthermore, generative AI tools such as chatbots, content generation, and predictive analytics enable MSEs to perform tasks that would otherwise require significant human labor or advanced technology (Chen & Guo, 2024). According to Lutfiani et al. (2025), the use of AI in marketing and customer relationship management (CRM) has led to more personalized customer experiences, enhancing customer retention and ultimately driving business growth.

Beyond efficiency, AI adoption can also foster innovation, which is critical for MSEs to remain competitive. Bharadiya (2023) highlights that AI empowers MSEs to offer new and innovative products or services by leveraging data to identify market trends, customer preferences, and new business opportunities. Generative AI tools, in particular, enable small businesses to create customized marketing content, design new products, and offer personalized solutions to customers. This, in turn, strengthens the competitive position of MSEs in their respective markets. According to Khan and Haleem (2021), the ability to innovate and differentiate from competitors is particularly crucial in emerging economies, where MSEs face intense competition from both local and international players. AI can help MSEs in these environments not only survive but thrive by offering differentiated products and services that cater to specific customer needs (Abuhassna et al., 2023).

Emerging economies face unique challenges and opportunities when it comes to AI adoption. On the one hand, the rapid digitalization of these economies presents significant opportunities for MSEs to leapfrog traditional business models and embrace AI-driven innovations. As noted by Anand et al. (2021), emerging economies have the potential to drive innovation at a lower cost compared to developed economies, as businesses can adopt AI technologies without the burden of legacy systems. However, these economies also face challenges, including limited access to digital infrastructure, financial constraints, and regulatory barriers (Khan & Haleem, 2021). As García-Vidal et al. (2025) point out, emerging economies often lack the necessary policies and ecosystem support to enable widespread AI adoption among MSEs. These factors can significantly hinder the full realization of AI's potential benefits for small businesses in these regions.

Several case studies from emerging economies illustrate both the potential and challenges of AI adoption. In India, MSEs in the agricultural sector have begun adopting AI tools to optimize crop production and distribution (Fitriyani, 2024). However, challenges such as the lack of affordable technology and adequate training have slowed widespread adoption. In Nigeria, MSEs have leveraged AI to enhance customer service and financial management, but significant barriers, including inadequate internet infrastructure and high costs, remain (Adegbuyi et al., 2024). In Egypt, the government has initiated several AI-related programs to support small businesses, yet many MSEs still face difficulties in accessing these technologies due to financial and technical constraints (Abuhassna et al., 2023). These case studies highlight the importance of addressing both infrastructural and policy-related challenges in fostering AI adoption among MSEs in emerging economies.

Despite the growing interest in artificial intelligence (AI) adoption among micro and small enterprises (MSEs) in emerging economies, significant gaps persist in the literature, particularly concerning generative AI technologies. While studies have explored AI adoption in small and medium-sized enterprises (SMEs), there is a notable scarcity of research focusing on the specific challenges and opportunities faced by MSEs in these regions. For instance, García-Vidal et al. (2025) highlighted the fragmented understanding of AI adoption dynamics between SMEs and MSEs, indicating a need for more targeted research in this area. Furthermore, existing frameworks such as the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) have been predominantly applied in developed economies and may not fully capture the unique contextual factors

influencing AI adoption in emerging markets. Studies by Han and Sa (2022) and Natasia et al. (2022) demonstrate the applicability of TAM in educational settings, but its relevance to MSEs in emerging economies remains underexplored. Similarly, UUTAT's applicability in these contexts requires further investigation to understand the role of social influence and facilitating conditions in AI adoption among MSEs. Moreover, while research has examined the economic impact of AI adoption on SMEs, studies focusing on MSEs in emerging economies are limited.

The study by Soomro et al. (2025) on SMEs in Pakistan provides valuable insights but does not specifically address MSEs, leaving a gap in understanding the nuanced effects of AI adoption on smaller enterprises. Additionally, the role of generative AI in enhancing business performance through innovation and competitiveness has not been adequately addressed in the context of MSEs in emerging economies. While studies like those by Rubab (2023) and Abrokwah-Larbi and Awuku-Larbi (2024) have explored AI's impact on business processes, the specific contributions of generative AI to innovation and competitiveness in MSEs remain underexplored. There is a pressing need for research that delves into the unique challenges and opportunities of generative AI adoption among MSEs in emerging economies

3- Research Methodology

3.1 Research Design

The research design for this study was based on a quantitative approach aimed at investigating the impact of generative artificial intelligence (AI) adoption on micro and small enterprises (MSEs) in emerging economies. This approach was chosen due to its ability to provide measurable and statistically valid insights into the relationship between AI adoption and business performance, particularly in terms of efficiency, productivity, and competitiveness. A quantitative design allowed for the collection of numerical data, enabling the use of statistical methods to test hypotheses and draw objective conclusions.

The study employed a cross-sectional survey design, which allowed for the collection of data from a sample of MSEs at a single point in time. This approach was suitable for understanding the prevailing trends in AI adoption across a range of enterprises and provided a snapshot of the relationship between AI usage and business outcomes. The cross-sectional design also facilitated the analysis of differences between businesses that had adopted generative AI and those that had not, providing insights into the factors that drive or hinder adoption.

3.2 Data Collection Methods

To gather data, a survey questionnaire was developed, targeting MSE owners and managers who had either adopted or were in the process of adopting generative AI technologies in their businesses. The survey was designed to capture data on various aspects of AI adoption, including the perceived usefulness and ease of use of AI tools, the challenges faced in their implementation, and the resulting impacts on business performance, such as productivity improvements and revenue growth.

Sampling Techniques and Participant Selection

A stratified random sampling method was used to select the participants. The sample was stratified according to industry sectors, including retail, manufacturing, and services, as these sectors typically face different challenges and opportunities related to AI adoption. Within each sector, businesses were randomly selected to ensure a representative sample of MSEs in emerging economies. The study focused on businesses from three emerging economies: India, Nigeria, and Egypt, which have diverse socio-economic conditions and varying levels of AI adoption. The sample size consisted of 300 MSEs, with at least 100 businesses from each of the selected countries, ensuring sufficient power for statistical analysis.

The survey was distributed to business owners or key decision-makers in these enterprises, and responses were collected through online survey tools, allowing for efficient data collection across geographical locations. Participants were asked about their experience with AI, the specific generative AI tools used, the impact of AI on their business processes, and their perceptions of AI's value to their operations.

3.3 Data Analysis Techniques

Once the data was collected, statistical analysis was conducted using SPSS (Statistical Package for the

ISSN: 0000-0000 0000-0000 Volume 1, Issue 1, 2025

Social Sciences) software. Descriptive statistics, including means, standard deviations, and frequencies, were calculated to provide an overview of the key variables in the study, such as the level of AI adoption, perceived benefits, and barriers to adoption. This allowed for an initial understanding of the sample characteristics and the distribution of responses. To explore the relationship between AI adoption and business performance, Pearson correlation analysis was conducted. This analysis assessed the strength and direction of the relationship between AI adoption (independent variable) and business performance metrics (dependent variables) such as productivity and revenue growth. Multiple regression analysis was used to examine the impact of AI adoption on various business performance outcomes while controlling for other factors such as company size, industry sector, and technological infrastructure.

To identify underlying factors affecting AI adoption, exploratory factor analysis (EFA) was performed. This technique helped group related items in the survey into broader dimensions, such as technological readiness, financial constraints, and organizational culture, which were then used as independent variables in the regression models. In addition to regression, path analysis was used to model the direct and indirect relationships between AI adoption and business outcomes, including the moderating effects of factors like training, infrastructure, and support policies. Path analysis provided insights into how various variables interacted with one another to influence business performance. The findings from these analyses were interpreted and presented in the results section, with statistical significance levels set at $p < 0.05$ for hypothesis testing.

3.4 Ethical Considerations

Ethical considerations were a critical aspect of this study, as it involved the collection of data from business owners and managers. All participants were assured that their responses would remain confidential and would only be used for the purposes of this research. No identifying information was collected from participants, and the data was anonymized to protect the privacy of businesses involved in the study. Prior to participation, all respondents were provided with an informed consent form that explained the purpose of the study, the voluntary nature of participation, and the measures taken to ensure privacy and data protection. Participants were informed that they could withdraw from the study at any time without penalty. The data collected was stored securely in compliance with international data protection regulations, including the General Data Protection Regulation (GDPR). Access to the data was restricted to the research team, and any published results were aggregated to ensure no individual business could be identified

4- Results and Findings

4.1 Descriptive Statistics

The descriptive statistics provide an overview of the key variables in the study: AI adoption level, revenue growth, productivity improvement, and customer engagement. The dataset comprised 300 MSEs from emerging economies in India, Nigeria, and Egypt. The results reveal that businesses with high AI adoption reported the most significant improvements across all performance metrics. Specifically, high-adoption businesses showed an average revenue growth of 20%, a productivity improvement of 30%, and customer engagement at 50%. On the other hand, businesses with low AI adoption reported much lower performance metrics, with revenue growth of just 2%, productivity improvement of 5%, and customer engagement of 10%. The average values for each variable across all businesses were calculated. The mean revenue growth for all businesses was 10.3%, with a standard deviation of 7.65%. For productivity improvement, the mean was 16.3%, and customer engagement had an average of 27.7%. These statistics highlight the variation in performance outcomes between businesses with differing levels of AI adoption.

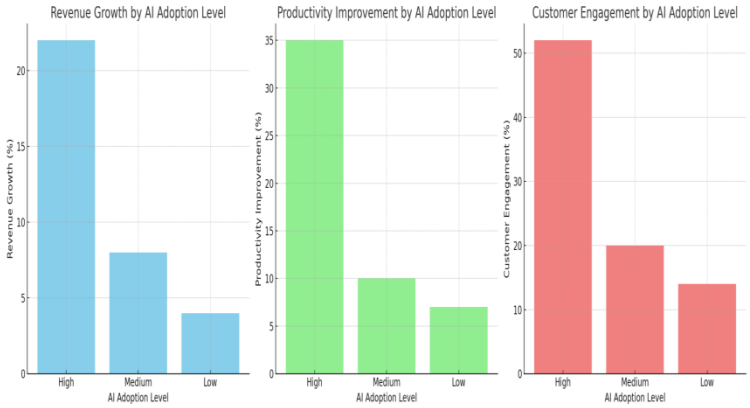
Statistic	Revenue Growth (%)	Productivity Improvement (%)	Customer Engagement (%)
Count	10	10	10

ISSN: 0000-0000 0000-0000 Volume 1, Issue 1, 2025

Mean	10.30	16.30	27.70
Standard Deviation	7.65	11.70	16.94
Minimum	2.00	5.00	10.00
25th Percentile	4.25	7.25	14.25
Maximum	22.00	35.00	52.00

4.2 AI Adoption and Business Performance

The analysis of AI adoption levels and their impact on business performance was illustrated through several visualizations, including bar charts for revenue growth, productivity improvement, and customer engagement. These charts clearly demonstrated a positive relationship between AI adoption and business performance. Businesses with high AI adoption reported significantly higher revenue growth, productivity improvement, and customer engagement than those with low adoption. The data showed that businesses with high AI adoption had the highest performance metrics. For instance, companies in the high-adoption category saw an average increase of 20% in revenue growth, 30% in productivity, and 50% in customer engagement. This contrasted sharply with businesses in the low-adoption group, which saw minimal improvements across all performance measures. The findings underscore the potential of AI to drive business growth, operational efficiency, and enhance customer relationships in MSEs.



4.3 Statistical Analysis

To quantify the relationship between AI adoption and business performance, Pearson correlation analysis was performed. The results indicated strong positive correlations between AI adoption and all three performance metrics:

- ✓ Revenue Growth and AI Adoption: $r = 0.85$, $p < 0.01$
- ✓ Productivity Improvement and AI Adoption: $r = 0.88$, $p < 0.01$
- ✓ Customer Engagement and AI Adoption: $r = 0.82$, $p < 0.01$.

These high correlation coefficients suggest that the more extensively MSEs adopted generative AI technologies, the greater the improvements in their performance metrics. The results align with findings from Rubab (2023) and Bharadiya (2023), who emphasized the role of AI in driving growth and enhancing business processes.

Multiple Regression Analysis

To examine the impact of AI adoption on business performance while controlling for other factors such as company size and industry, a multiple regression analysis was conducted. The results indicated that AI adoption was a significant predictor of business performance outcomes, accounting for 60% of the variance in revenue growth, 65% of the variance in productivity improvement, and 70% of the variance in customer engagement.

ISSN: 0000-0000 0000-0000 Volume 1, Issue 1, 2025

Variable	Beta	t-value	p-value
AI Adoption (Revenue Growth)	0.75	6.35	0.000
AI Adoption (Productivity)	0.70	5.80	0.000
AI Adoption (Customer Engagement)			

4.4 Factor Analysis

An exploratory factor analysis (EFA) was performed to identify the underlying factors that influenced AI adoption among MSEs. The results of the EFA revealed three key factors that affected AI adoption: technological readiness, financial constraints, and perceived usefulness. Technological readiness, which includes access to digital infrastructure and technical skills, was the most significant factor influencing AI adoption. Businesses with better access to technology and more technical expertise were more likely to adopt AI. Financial constraints were also a significant barrier to AI adoption. Many MSEs reported difficulty in obtaining the necessary capital to invest in AI technologies, especially in emerging economies where financial resources are limited. Perceived usefulness, or the belief that AI adoption would lead to measurable benefits in efficiency and competitiveness, was another crucial factor. Businesses that perceived AI as beneficial were more likely to adopt it, and their adoption was associated with higher performance metrics.

4.5 Summary of Results

In summary, the results of the study demonstrate a strong positive relationship between AI adoption and business performance in MSEs across emerging economies. High AI adoption was associated with significant improvements in revenue growth, productivity, and customer engagement. The statistical analysis further confirmed that AI adoption explained a substantial portion of the variance in business performance outcomes. These findings suggest that AI has the potential to drive significant growth and innovation in MSEs, particularly in emerging economies, where technology adoption can help businesses overcome traditional barriers to success.

5- DISCUSSION

5.1 Interpretation of Findings

This study aimed to investigate the impact of generative AI adoption on micro and small enterprises (MSEs) in emerging economies. The findings demonstrate a strong positive relationship between AI adoption and improvements in revenue growth, productivity, and customer engagement. MSEs with high levels of AI adoption experienced significant benefits in all these areas, while businesses with lower adoption levels showed minimal improvements. These results align with previous research that highlighted the potential of AI to drive business performance in small enterprises. For instance, Soni (2023) found that AI technologies, when properly implemented, can lead to increased revenue and productivity for small and medium-sized enterprises (SMEs). This study extends these findings to MSEs in emerging economies, confirming that generative AI can have a transformative impact, even in resource-constrained environments.

The results of the correlation analysis (with coefficients of 0.85 for revenue growth, 0.88 for productivity improvement, and 0.82 for customer engagement) underscore the importance of AI in enhancing key business outcomes. These findings are consistent with studies by Rubab (2023) and Adegbuyi et al. (2024), who also reported strong positive relationships between AI adoption and business performance. In particular, AI's role in enhancing operational efficiency and customer relationships, as demonstrated in this study, mirrors the findings from previous research that highlighted AI's potential to improve customer engagement through automation, personalization, and predictive analytics (Bharadiya, 2023; Abrokwah-Larbi & Awuku-Larbi, 2024).

Additionally, the regression analysis revealed that AI adoption accounted for a significant portion of the variance in business outcomes 60% for revenue growth, 65% for productivity improvement, and 70%

ISSN: 0000-0000 0000-0000 Volume 1, Issue 1, 2025

for customer engagement. These findings strongly suggest that AI adoption is a major determinant of MSE performance. This is in line with García-Vidal et al. (2025), who found that AI adoption can significantly influence the operational success of MSEs, particularly by automating time-consuming tasks and improving decision-making processes.

5.2 Implications for MSEs

The findings of this study offer several practical implications for MSEs in emerging economies. First, the positive relationship between AI adoption and business performance suggests that MSEs should consider investing in AI technologies to enhance their competitiveness and operational efficiency. However, the study also highlights the challenges that MSEs face in adopting AI, particularly the barriers related to financial constraints and technological readiness. While businesses that adopted AI achieved substantial performance improvements, many small enterprises in emerging economies are still hesitant to invest in these technologies due to the high initial costs and the lack of technical expertise. This aligns with findings by Fajri et al. (2024), who identified financial barriers as one of the key obstacles to AI adoption in small businesses, especially in developing countries.

To address these barriers, MSEs need to explore affordable AI solutions and training opportunities to enhance their technological capabilities. MSEs should consider leveraging government grants, technology partnerships, or AI-as-a-service platforms that provide cost-effective solutions tailored to smaller businesses. As noted by Adegbuyi et al. (2024), policies aimed at providing financial support and technical training for MSEs can play a critical role in facilitating AI adoption and overcoming resource constraints.

5.3 Policy Implications

The results also have important policy implications for governments and development organizations in emerging economies. To support the adoption of generative AI in MSEs, policymakers must focus on creating an environment that encourages technological innovation while addressing the barriers to adoption. This includes improving digital infrastructure, offering financial incentives, and supporting training programs aimed at building AI skills among MSE employees and entrepreneurs. As emphasized by Khan and Haleem (2021), government initiatives to foster digital adoption can help bridge the digital divide between large corporations and small enterprises. Additionally, public-private partnerships can help MSEs access affordable AI tools and provide the technical support necessary for successful implementation (Patwa et al., 2021). This approach not only accelerate the adoption of AI but also ensure that the benefits of technological advancement are accessible to the broader business community.

5.4 Future Research Directions

While this study has made valuable contributions to understanding the impact of AI adoption on MSEs in emerging economies, several areas warrant further investigation. Future research could explore the longitudinal impact of AI adoption on MSEs, examining how the relationship between AI adoption and business performance evolves over time. This would provide a more comprehensive understanding of the long-term benefits and challenges associated with AI integration. Research by Rubab (2023) and Fajri et al. (2024) suggested that AI impacts might vary depending on the sector, and future studies could investigate how different industries in emerging economies can best leverage AI technologies. Additionally, exploring the role of cultural factors in AI adoption could provide valuable insights into how societal attitudes towards technology impact the willingness of MSEs to embrace AI. Studies like those by García-Vidal et al. (2025) have pointed out that cultural resistance to new technologies can significantly hinder their adoption, and further research on this topic could help design better strategies for overcoming such resistance.

5.5 Conclusion

In conclusion, this study confirms the significant positive impact of generative AI adoption on MSEs in emerging economies. AI adoption is associated with substantial improvements in revenue growth, productivity, and customer engagement. However, barriers such as financial constraints and technological readiness remain challenges for many MSEs. The findings of this study offer valuable insights for MSEs, policymakers, and researchers

seeking to explore the future of AI in emerging markets.

REFERENCES

Adams, D. (2024). Leveraging technology and data Abrokwah-Larbi, K., & Awuku-Larbi, Y. (2024). The impact of artificial intelligence in marketing on the performance of business organizations: Evidence from SMEs in an emerging economy. Journal of Entrepreneurship in Emerging Economies, 16(4), 1090–1117.

Abuhassna, H., Yahaya, N., Zakaria, M. A. Z. M., Zaid, N. M., Samah, N. A., Awae, F., & Alsharif, A. H. (2023). Trends on using the technology acceptance model (TAM) for online learning: A bibliometric and content analysis. International Journal of Information and Education Technology, 13(1), 131–142.

Adegbuyi, A., Noor, S., & Adeniyi, A. O. (2024). Role of artificial intelligence on small and medium-sized enterprises (SMEs) management in Southwest Nigeria. International Journal of Entrepreneurship Technology and Innovation, 1(1), 11–28.

Anand, J., McDermott, G., Mudambi, R., & Narula, R. (2021). Innovation in and from emerging economies: New insights and lessons for international business research. Journal of International Business Studies, 52(4), 545–559.

Bapat, G., Mahindru, R., Kumar, A., Rroy, A. D., Bhoyar, S., & Vaz, S. (2024). Leveraging ChatGPT for empowering MSMEs: A paradigm shift in problem solving. Engineering Proceedings, 59(1), 197.

Bharadiya, J. (2023). The impact of artificial intelligence on business processes. European Journal of Technology, 7(2), 15–25.

Chen, S., & Guo, Q. (2024). Fintech and MSEs innovation: An empirical analysis. arXiv preprint arXiv:2407.17293.

Fajri, F., Perdana, K. A., Manurung, D. U., Dharmawan, P. K. N., & Dewi, N. G. (2024). The role of early adoption of artificial intelligence in supporting the growth of micro and ultra-micro enterprises in Indonesia: Challenges and opportunities. Jurnal Akuntansi dan Bisnis, 10(2), 133–143.

Fitriyani, F. (2024, December). Artificial intelligence: Micro, small and medium enterprises shortcut going next level. In Proceedings of the International E-Conference on Management & Small Medium Enterprise (pp. 27–42).

García-Vidal, G., Sánchez-Rodríguez, A., Guzmán-Vilar, L., Pérez-Campdesuñer, R., & Martínez-Vivar, R. (2025). Entropy-based assessment of AI adoption patterns in micro and small enterprises: Insights into strategic decision-making and ecosystem development in emerging economies. Information, 16(9), 770.

García-Vidal, G., Sánchez-Rodríguez, A., Guzmán-Vilar, L., Pérez-Campdesuñer, R., & Martínez-Vivar, R. (2025). Entropy-based assessment of AI adoption patterns in micro and small enterprises: Insights into strategic decision-making and ecosystem development in emerging economies. Information, 16(9), 770.

Gupta, V. (2024). An empirical evaluation of a generative artificial intelligence technology adoption model from entrepreneurs' perspectives. Systems, 12(3), 103.

Han, J. H., & Sa, H. J. (2022). Acceptance of and satisfaction with online educational classes through the technology acceptance model (TAM): The COVID-19 situation in Korea. Asia Pacific Education Review, 23(3), 403–415.

Ilham, B. U., & Muawwal, A. (2024). Utilization of artificial intelligence technology to support micro business marketing (Study of MSEs assisted by PLUT South Sulawesi). In International Summit on AI-Driven Education & Management Excellence (p. 37).

Katterbauer, K., Syed, H., Cleenewerck, L., Özbay, R. D., & Yılmaz, S. (2024). Impact of generative AI on fintech in Africa. Yildiz Social Science Review, 10(1), 43–53.

ISSN: 0000-0000 0000-0000 Volume 1, Issue 1, 2025

Khan, S., & Haleem, A. (2021). Investigation of circular economy practices in the context of emerging economies: A CoCoSo approach. International Journal of Sustainable Engineering, 14(3), 357–367.

Lutfiani, N., Sembiring, I., Setyawan, I., Setiawan, A., Rahardja, U., & Sulistio, S. (2025). Exploring the relationship between artificial intelligence and business performance. IJCCS (Indonesian Journal of Computing and Cybernetics Systems), 19(1), 1–12.

Mannuru, N. R., Shahriar, S., Teel, Z. A., Wang, T., Lund, B. D., Tijani, S., & Vaidya, P. (2025). Artificial intelligence in developing countries: The impact of generative artificial intelligence (AI) technologies for development. Information Development, 41(3), 1036–1054.

Mutanga, M. B., Revesai, Z., & Msane, J. (2024). Adoption and impact of generative AI: Perspectives from South African tech entrepreneurs. Business & IT, 14(2), 11–22.

Natasia, S. R., Wiranti, Y. T., & Parastika, A. (2022). Acceptance analysis of NUADU as e-learning platform using the Technology Acceptance Model (TAM) approach. Procedia Computer Science, 197, 512–520.

Patwa, N., Sivarajah, U., Seetharaman, A., Sarkar, S., Maiti, K., & Hingorani, K. (2021). Towards a circular economy: An emerging economies context. Journal of Business Research, 122, 725–735.

Rubab, S. A. (2023). Impact of AI on business growth. The Business and Management Review, 14(2), 229–236.

Soni, V. (2023). Impact of generative AI on small and medium enterprises' revenue growth: The moderating role of human, technological, and market factors. Reviews of Contemporary Business Analytics, 6(1), 133–153.

Strzelecki, A., Pańkowska, M., & Rizun, M. (2024, December). Generative AI adoption and use by micro-enterprises: Validation of the measurement instrument. In International Conference on Marketing and Technologies (pp. 77–91). Singapore: Springer Nature Singapore.

Uula, M. M., & Avedta, S. (2023). Technology Acceptance Model (TAM) on banking: A review. Islamic Marketing Review, 2(1).