
DIGITAL TRANSFORMATION AND E-COMMERCE ADOPTION AMONG SMALL BUSINESSES IN DEVELOPING AFRICAN ECONOMIES: EVIDENCE FROM ETHIOPIA AND UGANDA

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Abstract

Digital transformation is a crucial driver of economic growth and innovation, particularly in developing economies. This study explores the adoption of e-commerce among small businesses in Ethiopia and Uganda, focusing on the factors influencing digital transformation in these markets. A comprehensive literature review was conducted to synthesize existing research on e-commerce adoption, technological readiness, and the socio-economic challenges faced by small businesses. The findings highlight the pivotal role of technological infrastructure, government policies, and digital literacy in shaping e-commerce adoption. Barriers such as inadequate internet access, limited financial resources, and regulatory hurdles were identified as significant challenges. Conversely, the study found that entrepreneurial orientation and market dynamics foster digital growth and e-commerce participation. This review provides a conceptual framework to understand the complexities of digital transformation in small businesses within developing economies. Recommendations are offered for policy interventions and strategic support to enhance digital integration in these contexts. The study underscores the importance of fostering an enabling environment for e-commerce to thrive among small businesses in Ethiopia and Uganda.

Keywords: *Digital Transformation, E-Commerce Adoption, Small Businesses, Developing Economies, Ethiopia and Uganda.*

A. INTRODUCTION

Digital transformation has emerged as a fundamental aspect of modern business strategy, reshaping industries and driving economic growth worldwide. The advent of e-commerce has played a pivotal role in this transformation, enabling businesses to reach new markets and streamline operations (Banga, 2020). In developing economies, particularly in Africa, the potential for e-commerce is significant due to the rapid growth of internet penetration and mobile technology (Ogunleye, 2019). Despite these opportunities, small businesses in many African countries still face substantial barriers to fully integrating digital tools into their operations (Adeniran & Johnston, 2021). For example, in Ethiopia and Uganda, while there has been an increase in internet users, the adoption of e-commerce by small

businesses remains limited (Adeniran & Johnston, 2021; Tawodzera, 2023). Several factors contribute to this lag, including poor digital infrastructure, low digital literacy, and inadequate policy support (Ngarachu, 2022). Furthermore, limited access to financial services and credit poses additional challenges, hindering the ability of small enterprises to invest in e-commerce platforms (Chirisa & Dumba, 2020). Studies have shown that enhancing digital skills and providing targeted financial support can significantly impact e-commerce adoption rates (Mensah, 2018; Oluwaseyi & Okoro, 2021). However, there remains a significant gap in understanding the unique socio-economic and cultural factors affecting e-commerce adoption in specific African contexts (Mutale & Mwanza, 2020). The interplay of these factors suggests a complex ecosystem where digital transformation is both a challenge and an opportunity for small businesses (Kamau & Ayugi, 2022). Recognizing this complexity is crucial for policymakers aiming to foster an enabling environment for digital entrepreneurship (Ismail, 2021). The success of digital transformation in Africa's small business sector depends heavily on addressing these multifaceted challenges (Karim, 2023). In the case of Ethiopia and Uganda, the need for more targeted digital policies and infrastructure development is evident (Nzomoi, 2022). This context underscores the importance of investigating the drivers and barriers to e-commerce adoption to develop effective strategies that can support small businesses (Adeniran & Johnston, 2021; Kamau & Ayugi, 2022). A nuanced understanding of these issues will contribute to better policy-making and capacity-building initiatives (Mensah, 2018; Ismail, 2021). Consequently, this study aims to explore the factors influencing e-commerce adoption among small businesses in these two countries, providing a comprehensive review of the existing literature (Ngarachu, 2022). By doing so, it seeks to bridge the knowledge gap and offer practical recommendations for stakeholders (Chirisa & Dumba, 2020). Thus, a focused approach to understanding digital transformation within this context is critical for leveraging e-commerce as a tool for economic development (Tawodzera, 2023; Karim, 2023).

The adoption of e-commerce among small businesses in developing economies like Ethiopia and Uganda is hindered by multiple layers of challenges that impede their digital transformation journey. Despite a growing recognition of the benefits associated with e-commerce—such as expanded market reach, cost efficiency, and improved customer engagement—many small enterprises in these regions are still lagging behind (Banga, 2020; Ngarachu, 2022). The primary challenge lies in the inadequate digital infrastructure that affects both urban and rural settings, leading to inconsistent internet connectivity and high data costs (Nzomoi, 2022). Furthermore, the low levels of digital literacy among small business owners prevent effective utilization of e-commerce platforms, posing a significant barrier to entry (Chirisa & Dumba, 2020). Financial constraints are another critical issue, as many small businesses struggle to access the capital needed to invest in digital tools and e-commerce solutions (Oluwaseyi & Okoro, 2021). Regulatory challenges also exacerbate the problem, with bureaucratic hurdles, lack of supportive e-commerce regulations, and inconsistent enforcement policies making it difficult for businesses to

operate digitally (Kamau & Ayugi, 2022). Moreover, cultural factors such as trust issues with online transactions and a preference for cash-based dealings limit the acceptance of digital payment systems, which are essential for e-commerce growth (Mutale & Mwanza, 2020). In the context of Ethiopia and Uganda, these challenges are compounded by socio-political instability and inadequate policy frameworks that fail to address the unique needs of small businesses transitioning to digital platforms (Ismail, 2021; Nzomoi, 2022). Studies have pointed out the need for more tailored approaches that consider local dynamics and business environments to foster e-commerce adoption (Adeniran & Johnston, 2021). Without addressing these critical barriers, the potential of e-commerce to transform small businesses in these countries remains limited (Mensah, 2018). Therefore, understanding the specific challenges faced by small businesses in Ethiopia and Uganda is crucial for developing targeted strategies that can enhance digital inclusion and economic growth (Banga, 2020; Karim, 2023). Addressing these issues requires a multi-stakeholder approach, involving government, private sector, and international development organizations, to create a more conducive environment for digital business (Ogunleye, 2019). It is essential to focus on building digital infrastructure, improving digital literacy, and revising regulatory frameworks to support small businesses in their digital transformation (Chirisa & Dumba, 2020). By identifying and understanding these barriers, this study aims to provide a comprehensive framework to guide future policies and interventions that can facilitate e-commerce adoption among small businesses in developing African economies (Adeniran & Johnston, 2021).

The significance of this study lies in its potential to provide a comprehensive understanding of e-commerce adoption among small businesses in Ethiopia and Uganda, two developing economies with unique socio-economic landscapes. This research contributes to the existing literature by addressing a critical gap in knowledge regarding the drivers and barriers to digital transformation in African small business contexts, which remain underexplored (Ogunleye, 2019; Mutale & Mwanza, 2020). By focusing on Ethiopia and Uganda, the study captures diverse experiences of digital adoption that reflect broader trends and challenges in Sub-Saharan Africa (Banga, 2020; Karim, 2023). The findings of this study are particularly significant for policymakers, providing evidence-based insights into the effectiveness of current digital policies and the need for tailored interventions that consider local conditions (Ismail, 2021; Nzomoi, 2022). Additionally, this research has practical implications for business leaders and entrepreneurs who seek to navigate the complexities of digital transformation in resource-constrained environments (Kamau & Ayugi, 2022). Understanding the factors that influence e-commerce adoption can help small business owners make informed decisions on investing in digital tools and platforms (Chirisa & Dumba, 2020). This study also provides a framework for development agencies and international organizations aiming to support digital inclusion initiatives in Africa, offering strategic recommendations to enhance digital readiness and foster entrepreneurial growth (Mensah, 2018; Ngarachu, 2022). By exploring the role of public-private partnerships and community-based approaches,

the research underscores the importance of collaboration in overcoming digital barriers (Adeniran & Johnston, 2021). Moreover, the comparative analysis between Ethiopia and Uganda adds value by highlighting context-specific challenges and opportunities, which can inform cross-country learning and policy harmonization efforts (Karim, 2023). The study's emphasis on digital literacy, infrastructure development, and regulatory support aligns with broader global goals of promoting sustainable development and economic inclusivity through digital means (Oluwaseyi & Okoro, 2021). Ultimately, this research offers a holistic perspective that can guide future studies, policy frameworks, and strategic plans for enhancing e-commerce adoption among small businesses in similar developing contexts (Banga, 2020; Ismail, 2021). By providing actionable insights and filling critical gaps in the literature, this study plays a crucial role in advancing the discourse on digital transformation in Africa's burgeoning economies (Kamau & Ayugi, 2022; Nzomoi, 2022).

Given the complex landscape of digital transformation and e-commerce adoption among small businesses in Ethiopia and Uganda, this study aims to achieve several key objectives to provide a comprehensive understanding of the subject. Firstly, the research seeks to identify the primary factors that influence the adoption of e-commerce among small businesses in these developing economies (Adeniran & Johnston, 2021). This includes an exploration of technological readiness, digital literacy levels, and the availability of necessary infrastructure (Ngarachu, 2022). Secondly, the study aims to examine the specific barriers faced by these small businesses in their journey towards digital adoption, such as financial constraints, regulatory challenges, and socio-cultural factors (Chirisa & Dumba, 2020; Mutale & Mwanza, 2020). Thirdly, it intends to analyze the role of government policies and institutional frameworks in either facilitating or hindering e-commerce adoption, considering both current and potential policy interventions (Ismail, 2021; Kamau & Ayugi, 2022). By focusing on these aspects, the research contributes to the broader understanding of how policy environments impact digital transformation efforts in developing countries (Nzomoi, 2022). Fourthly, this study will assess the potential for public-private partnerships to support small businesses in overcoming digital adoption barriers, recognizing the importance of collaboration between various stakeholders (Mensah, 2018). Fifthly, it seeks to provide a comparative analysis of the digital readiness and e-commerce adoption rates between Ethiopia and Uganda, highlighting contextual differences and similarities that may influence policy recommendations (Ogunleye, 2019). Lastly, the research will offer strategic insights and practical recommendations for policymakers, development agencies, and business leaders to create a more enabling environment for digital entrepreneurship (Karim, 2023). This includes suggesting targeted interventions to improve digital literacy, build robust digital infrastructure, and develop supportive regulatory frameworks that can enhance the competitiveness of small businesses in digital markets (Banga, 2020). By achieving these objectives, the study aims to fill critical gaps in the literature and provide a foundation for future research that can further explore digital transformation and e-commerce adoption in the context of developing African

economies (Adeniran & Johnston, 2021; Ngarachu, 2022). Such insights are crucial for driving economic growth, fostering innovation, and ensuring sustainable development in regions that are often overlooked in global digital economy discourse (Kamau & Ayugi, 2022; Karim, 2023).

Despite the growing body of research on digital transformation and e-commerce adoption, there remains a significant gap in understanding the specific dynamics affecting small businesses in developing African economies, particularly in Ethiopia and Uganda. Existing studies have largely focused on general e-commerce trends and barriers in developed regions or have grouped African countries together without recognizing their distinct contexts (Ogunleye, 2019; Chirisa & Dumba, 2020). This lack of specificity overlooks the unique socio-economic, cultural, and regulatory environments that influence e-commerce adoption at the local level (Mutale & Mwanza, 2020; Nzomoi, 2022). Moreover, while some research has addressed the role of digital infrastructure and financial inclusion in supporting e-commerce, there is limited exploration of how these factors interact with local business practices, policy environments, and digital literacy levels in Ethiopia and Uganda (Karim, 2023; Mensah, 2018). The literature also lacks a comprehensive analysis of how governmental and non-governmental interventions can be optimized to support small businesses in these countries (Ismail, 2021; Ngarachu, 2022). Many studies have been descriptive rather than analytical, providing a surface-level understanding without delving into the underlying mechanisms driving e-commerce adoption (Adeniran & Johnston, 2021; Kamau & Ayugi, 2022). Furthermore, the potential role of public-private partnerships and community-based digital initiatives in overcoming digital barriers has not been sufficiently examined (Banga, 2020). This study addresses these gaps by providing a nuanced and comparative analysis of e-commerce adoption among small businesses in Ethiopia and Uganda, focusing on the interplay between digital infrastructure, financial access, regulatory frameworks, and socio-cultural dynamics (Oluwaseyi & Okoro, 2021; Kamau & Ayugi, 2022). By integrating insights from both countries, the research contributes to a more contextualized understanding of digital transformation in Africa, enabling the development of targeted policies and strategies (Karim, 2023; Nzomoi, 2022). Additionally, this study introduces a framework for assessing digital readiness and e-commerce potential that can be adapted to other developing contexts, offering practical recommendations for stakeholders aiming to promote digital inclusion and economic growth (Mensah, 2018; Ngarachu, 2022). By bridging these gaps, the research not only enhances the theoretical discourse on digital transformation but also provides actionable insights for practitioners and policymakers (Chirisa & Dumba, 2020; Ogunleye, 2019).

This paper is structured to provide a comprehensive exploration of the factors influencing e-commerce adoption among small businesses in Ethiopia and Uganda, offering a nuanced understanding of digital transformation in these developing economies. The study begins with an Introduction that outlines the background, problem statement, research objectives, significance, literature gaps, and contributions of the research. This section sets the foundation by situating the study within the

broader discourse on digital transformation and e-commerce in developing contexts, highlighting the specific challenges faced by small businesses in Ethiopia and Uganda (Adeniran & Johnston, 2021; Kamau & Ayugi, 2022). The next section, Literature Review, delves into existing scholarly work on digital transformation, focusing on technological readiness, infrastructure, regulatory frameworks, digital literacy, and financial inclusion as critical determinants of e-commerce adoption (Chirisa & Dumba, 2020; Karim, 2023). This section synthesizes key findings from prior studies and identifies the gaps that this research aims to fill. The Methodology section follows, detailing the research design, data collection methods, and analytical approaches employed in the study. Given that this research is based on a literature review, this section will outline the criteria for selecting relevant studies, the thematic analysis used to categorize findings, and the comparative approach adopted to analyze the cases of Ethiopia and Uganda (Mensah, 2018; Ngarachu, 2022). The Results section presents the synthesized findings from the literature, identifying the main drivers, barriers, and contextual factors influencing e-commerce adoption in the two countries (Oluwaseyi & Okoro, 2021; Nzomoi, 2022). It provides a detailed analysis of the interplay between digital infrastructure, policy environments, and socio-cultural dynamics. The Discussion section then interprets these findings, offering insights into the implications for theory, policy, and practice. It discusses how these findings contribute to existing knowledge and what they mean for stakeholders, including policymakers, business leaders, and development agencies (Ismail, 2021; Banga, 2020). Finally, the Conclusion section summarizes the key findings, restates the importance of the study, and provides recommendations for future research. It also highlights practical steps that can be taken to support e-commerce adoption among small businesses in similar developing contexts, focusing on enhancing digital readiness, building robust digital infrastructure, and fostering inclusive policy frameworks (Mutale & Mwanza, 2020; Ogunleye, 2019). This structured approach ensures a logical flow of ideas and facilitates a thorough understanding of the complexities involved in digital transformation in Ethiopia and Uganda.

B. METHOD

This study employs a comprehensive literature review methodology to investigate the factors influencing e-commerce adoption among small businesses in Ethiopia and Uganda. The literature review method was chosen to synthesize and critically analyze existing research findings from various scholarly sources, including peer-reviewed journal articles, books, and reports, focusing on digital transformation and e-commerce in developing economies. The selection criteria for the literature included relevance to the topics of digital readiness, infrastructure, financial inclusion, regulatory frameworks, and socio-cultural factors affecting e-commerce adoption. A systematic search was conducted using academic databases such as Scopus, Web of Science, and Google Scholar to identify studies published within the last 15 years, ensuring the inclusion of both recent and foundational research (Adeniran & Johnston, 2021; Karim, 2023). Keywords such as e-commerce adoption, digital transformation,

small businesses, developing economies, Ethiopia, and Uganda were used to refine the search results. Studies were then screened for relevance based on their abstracts, and full-text articles were reviewed to ensure a comprehensive understanding of the various drivers and barriers to e-commerce adoption in these countries. Thematic analysis was employed to categorize the findings into key themes, such as technological readiness, digital literacy, policy support, financial constraints, and cultural factors, which are critical in shaping the digital landscape for small businesses (Chirisa & Dumba, 2020; Ngarachu, 2022). This approach allowed for a comparative analysis of the distinct challenges and opportunities faced by small businesses in Ethiopia and Uganda, highlighting both common and unique elements that influence digital adoption in these contexts (Oluwaseyi & Okoro, 2021; Nzomoi, 2022). Additionally, this method facilitated the identification of gaps in the current literature, enabling the formulation of practical recommendations for policymakers and stakeholders to foster a more enabling environment for e-commerce (Ismail, 2021; Kamau & Ayugi, 2022). The review process was iterative, involving continuous refinement of themes and the inclusion of new studies as they emerged during the research period, ensuring a robust and dynamic understanding of the topic (Mensah, 2018). The results from this literature review form the basis for understanding the complexities and nuances of digital transformation among small businesses in developing African economies, providing a foundation for future research and policy development (Banga, 2020; Ogunleye, 2019).

C. RESULTS AND DISCUSSION

1. Technological Readiness and Infrastructure Deficiency

The study reveals that technological readiness and the deficiency of digital infrastructure are critical barriers to e-commerce adoption among small businesses in Ethiopia and Uganda. Small businesses in both countries face challenges related to inadequate internet connectivity, which affects their ability to engage in online commerce effectively. In many rural areas, access to reliable internet remains a significant issue, with frequent disruptions and slow speeds creating a digital divide that limits market access and competitiveness. High data costs further exacerbate the problem, making it economically unfeasible for many small enterprises to maintain consistent online presence. Despite some progress in urban centers, where digital infrastructure is relatively more developed, the rural-urban divide continues to hinder equitable e-commerce growth. Many small businesses are unable to invest in the necessary digital tools and platforms due to the lack of affordable and reliable internet services. This situation is compounded by limited access to technological resources, such as computers and smartphones, which are essential for operating digital platforms. Moreover, the study finds that the lack of infrastructure extends to other digital technologies, such as payment gateways and logistics networks, which are crucial for e-commerce. Without robust digital infrastructure, small businesses struggle to process online transactions, manage digital marketing, and deliver goods and services efficiently. The gaps in technological readiness also mean that businesses

are unable to leverage advanced e-commerce tools, such as customer relationship management systems and data analytics, which are vital for scaling operations. The lack of investment in digital infrastructure by both the private and public sectors has created a challenging environment for digital transformation. Additionally, unreliable electricity supply in many regions further limits the ability to support digital infrastructure, affecting both operational stability and business continuity. Small businesses in Ethiopia and Uganda are therefore caught in a cycle where poor digital infrastructure limits their e-commerce potential, reducing their ability to generate the revenues needed to invest in further digital development. This technological gap not only affects business operations but also restricts access to regional and global markets, where digital trade is increasingly becoming the norm. Consequently, the deficiency in technological readiness and digital infrastructure remains a primary impediment to the broader adoption of e-commerce among small businesses in these developing economies.

2. Impact of Digital Literacy on E-Commerce Adoption

The study finds that digital literacy levels among small business owners in Ethiopia and Uganda are critically low, significantly impacting their ability to adopt e-commerce effectively. Many small business operators lack basic digital skills, which hinders their understanding and use of e-commerce platforms, limiting their ability to take advantage of digital marketing and online sales opportunities. This lack of proficiency extends to fundamental digital tasks such as setting up and managing websites, engaging with customers online, and utilizing digital payment systems. As a result, many small businesses remain offline or rely on traditional, non-digital methods of conducting business, missing out on the potential benefits of broader market reach and increased sales efficiency offered by e-commerce. The research highlights that even when small businesses have access to digital tools, their utilization remains minimal due to a lack of awareness and understanding of how to leverage these tools for business growth. Additionally, there is a notable absence of training programs specifically tailored to improve digital competencies among small business owners in both countries, exacerbating the problem. Many entrepreneurs express concerns over the complexity of digital platforms and the perceived difficulty in learning new technologies, which further deters them from adopting e-commerce solutions. The study also points out that digital literacy challenges are not only confined to business owners but also extend to their employees, who often lack the necessary skills to manage and operate digital tools effectively. This situation creates a bottleneck in the digital transformation process, as businesses are unable to fully integrate e-commerce into their operations. Moreover, the lack of digital literacy contributes to low confidence levels among business owners regarding the security and reliability of online transactions, further reducing their willingness to adopt digital payment methods. Without adequate digital skills, small businesses struggle to navigate the rapidly evolving digital landscape, leaving them at a competitive disadvantage. The research suggests that this gap in digital literacy is a major barrier

to scaling e-commerce among small businesses, as it prevents them from fully engaging with digital markets. As such, the deficiency in digital literacy is a significant factor contributing to the slow pace of e-commerce adoption in Ethiopia and Uganda, limiting their potential for digital growth and innovation in the business sector.

3. Financial Constraints and Access to Digital Finance

The study identifies financial constraints as a major barrier to e-commerce adoption among small businesses in Ethiopia and Uganda, significantly affecting their ability to engage in digital markets. Many small business owners lack access to affordable credit and investment opportunities, which are crucial for financing digital transformation initiatives such as developing websites, digital marketing, and implementing e-commerce platforms. The research highlights that traditional financial institutions often perceive small businesses as high-risk, leading to stringent loan requirements that are difficult for these enterprises to meet. As a result, small businesses face considerable challenges in securing the necessary capital to invest in digital tools and technologies that could enhance their online presence and competitive edge. Moreover, there is a notable gap in the availability and accessibility of digital financial services, such as mobile banking and digital payment gateways, which are essential for facilitating e-commerce transactions. The limited reach of digital financial services in rural and underserved areas further compounds the problem, making it difficult for small businesses to participate fully in digital trade. Additionally, high transaction fees associated with digital payments are cited as a deterrent, as they reduce profit margins and discourage businesses from adopting these systems. The study also points out that small businesses often lack knowledge and trust in digital financial products, which leads to a preference for cash-based transactions over digital alternatives. This reliance on cash transactions creates inefficiencies and limits the scalability of e-commerce operations, particularly for businesses that aim to reach broader, online consumer bases. Furthermore, there is a lack of financial inclusion initiatives that are specifically designed to support small businesses in accessing digital finance, leaving a gap that impacts their ability to grow and compete. The inability to access affordable digital financial services restricts these businesses from integrating comprehensive e-commerce strategies, ultimately hindering their growth potential. The study finds that this financial barrier is a significant hindrance not only to digital transformation but also to the broader economic development goals that hinge on a vibrant and inclusive digital economy. Consequently, the financial constraints faced by small businesses in Ethiopia and Uganda represent a substantial obstacle to achieving sustainable digital growth through e-commerce.

4. Regulatory Environment and Policy Support

The study reveals that the regulatory environment and lack of cohesive policy support significantly impact e-commerce adoption among small businesses in Ethiopia and Uganda. Both countries have introduced various policies aimed at

promoting digital entrepreneurship and supporting small businesses; however, these policies are often inconsistent and poorly implemented, resulting in minimal impact on the ground. The research highlights that regulatory frameworks governing e-commerce are either outdated or not fully aligned with the current digital landscape, creating confusion and uncertainty for small businesses trying to navigate the regulatory space. For instance, cumbersome bureaucratic procedures and unclear regulations around digital transactions and online business operations discourage small businesses from engaging in e-commerce. Additionally, there is a lack of streamlined processes for registering e-commerce businesses, securing digital licenses, and adhering to digital taxation policies, which further complicates the ease of doing business online. The study also finds that enforcement of existing digital regulations is often inconsistent, with varying degrees of compliance and support across different regions, leading to an uneven playing field for businesses. Moreover, there is limited awareness among small business owners about the existing digital policies and regulatory requirements, which often results in non-compliance or avoidance of digital platforms altogether. The absence of strong policy frameworks that address the unique needs and challenges of small businesses limits their capacity to adopt e-commerce and integrate digital solutions into their operations effectively. The study further identifies a lack of coordination between different government bodies and agencies responsible for digital policy implementation, which hampers the creation of a supportive ecosystem for digital entrepreneurship. This fragmented regulatory environment poses significant risks and challenges for small businesses, deterring them from making the necessary investments in e-commerce. In addition, the research notes that regulatory uncertainty surrounding data privacy, cybersecurity, and consumer protection also affects trust in digital transactions, which is crucial for e-commerce growth. The gap in coherent policy support and effective regulation creates an environment where small businesses struggle to thrive in the digital economy. As a result, the inadequate regulatory environment and lack of targeted policy support are major barriers to the adoption and growth of e-commerce among small businesses in these developing economies.

5. Socio-Cultural Factors Influencing E-Commerce Adoption

The study identifies several socio-cultural factors that significantly influence e-commerce adoption among small businesses in Ethiopia and Uganda. One of the key findings is that trust issues surrounding online transactions present a major challenge, with both business owners and customers often hesitant to engage in digital commerce due to concerns over fraud, security, and privacy. This lack of trust is compounded by a strong cultural preference for face-to-face interactions and cash-based transactions, which are deeply ingrained in the local business practices of both countries. Many small business owners and consumers perceive digital transactions as less reliable and transparent compared to traditional cash exchanges, leading to a reluctance to adopt e-commerce platforms. The research highlights that these cultural preferences create barriers to the acceptance and use of digital payment systems,

which are essential for conducting online business. Additionally, there is a limited understanding and awareness of the benefits of e-commerce among small business owners, which affects their willingness to shift from conventional business methods to digital platforms. The study also notes that word-of-mouth and community-based trust networks play a critical role in shaping business practices, and the absence of these trust networks in the digital space further inhibits e-commerce adoption. Small businesses often rely on local community trust to establish their credibility, and replicating this level of trust online remains a significant challenge. Furthermore, the research points out that cultural norms and societal attitudes towards technology and innovation vary between regions and communities, affecting the overall digital readiness and adaptability of small businesses. In rural areas, where traditional practices are more entrenched, the resistance to adopting digital commerce is even stronger. The study finds that this resistance is not just limited to older generations but is also prevalent among younger business owners who are skeptical about the practicality and benefits of e-commerce. Language barriers also contribute to the challenges of adopting e-commerce, as many digital platforms are not available in local languages, limiting accessibility for some small business owners. These socio-cultural factors collectively create a complex environment that affects the perception and uptake of e-commerce, making it difficult for small businesses to fully embrace digital transformation in Ethiopia and Uganda.

6. Potential of Public-Private Partnerships and Strategic Interventions

The study finds that public-private partnerships (PPPs) and strategic interventions have significant potential to address the barriers to e-commerce adoption among small businesses in Ethiopia and Uganda. The research highlights that collaborations between government bodies, private sector entities, and international organizations can play a crucial role in developing the necessary digital infrastructure and enhancing digital literacy, which are fundamental for fostering a robust e-commerce ecosystem. The study shows that successful PPPs have already been implemented in some sectors, focusing on areas such as telecommunications, internet penetration, and digital skills training, but there remains considerable room for expanding these initiatives to support small businesses more directly. The findings indicate that targeted interventions, such as subsidized digital tools and platforms, can help alleviate the financial constraints faced by small businesses, enabling them to invest in e-commerce solutions. Additionally, the study points to the importance of creating digital hubs and innovation centers through public-private collaboration, which can provide access to essential digital resources, training, and mentorship for small business owners. The research also underscores the potential benefits of financial partnerships, where private financial institutions and government agencies work together to provide affordable credit and microfinance specifically tailored for digital business development. Moreover, strategic interventions by international development organizations can help bridge the gap in regulatory support by offering technical assistance and policy guidance to create a more conducive environment for

digital trade. The study reveals that these partnerships are particularly effective when they involve local communities and stakeholders, ensuring that interventions are culturally sensitive and tailored to the specific needs of small businesses. Furthermore, there is evidence that collaborative efforts can enhance digital trust by promoting secure digital transaction systems and consumer protection policies, thereby encouraging wider e-commerce adoption. The research finds that creating awareness and advocacy programs through public-private partnerships can also play a vital role in shifting cultural attitudes towards digital business. Despite these opportunities, the study notes that the success of such interventions depends on effective coordination, continuous monitoring, and adapting strategies to evolving market conditions. Ultimately, the potential of public-private partnerships and strategic interventions lies in their ability to mobilize resources, expertise, and networks to support small businesses in overcoming digital barriers and leveraging e-commerce for growth in Ethiopia and Uganda.

The findings on technological readiness and infrastructure deficiency in Ethiopia and Uganda align with broader research highlighting similar challenges across developing economies, where inadequate digital infrastructure remains a significant barrier to e-commerce adoption. For instance, Mothobi and Grzybowski (2017) found that in Sub-Saharan Africa, inconsistent internet connectivity and high costs significantly reduce the ability of small businesses to engage in e-commerce, mirroring the digital divide observed in Ethiopia and Uganda. This divide is further emphasized by Chavula (2013), who noted that rural areas in Africa are disproportionately affected by a lack of reliable internet and technological resources, impeding equitable access to digital markets. Similarly, the high costs associated with internet access in these regions are consistent with findings from Gillwald et al. (2019), who pointed out that both affordability and quality of service are critical factors that deter small businesses from participating in digital economies. Moreover, the lack of investment in digital infrastructure by both public and private sectors, as highlighted by the study, resonates with the conclusions of Aker and Mbiti (2010), who argued that limited government and private sector investment in ICT development hampers digital transformation efforts. Studies by World Bank (2016) also support these findings, demonstrating that unreliable electricity supply and weak ICT infrastructure significantly limit digital business operations in many parts of Africa. Furthermore, research by Van Zyl, Alexander, and Wessels (2018) underscores the importance of robust digital infrastructure, such as payment gateways and logistics networks, for fostering e-commerce, and the absence of these elements creates a challenging environment for small businesses. The inability of small businesses to leverage advanced digital tools due to poor infrastructure, as identified in this study, is further corroborated by Foster and Graham (2017), who highlighted that limited access to digital tools and platforms reduces the competitiveness of small enterprises in global markets. The study's emphasis on the rural-urban divide is also supported by Msimang (2011), who noted that urban centers tend to benefit more from digital advancements, whereas rural areas are left behind, creating a digital exclusion gap.

Therefore, the findings of this research align with and extend previous literature by providing specific insights into the infrastructural deficiencies and technological readiness that continue to hinder e-commerce adoption among small businesses in Ethiopia and Uganda.

The finding that low digital literacy levels hinder e-commerce adoption among small businesses in Ethiopia and Uganda aligns with similar observations in other developing contexts, where a lack of digital skills poses a substantial barrier to leveraging digital tools effectively. As noted by Asongu and Nwachukwu (2016), digital literacy is a critical determinant of technology adoption across Africa, where inadequate education and limited exposure to digital tools result in underutilization of available digital resources. This is further supported by Qureshi (2017), who emphasizes that digital literacy is not only about understanding technology but also about the capacity to use it effectively in business settings, particularly in e-commerce. The absence of structured training programs for small business owners in digital skills, as highlighted in the study, echoes the findings of Boateng et al. (2019), who argue that digital capacity-building initiatives are crucial for enhancing e-commerce adoption in African markets. Similarly, Molla and Licker (2005) demonstrate that a low level of e-readiness, which includes digital literacy, significantly impacts the decision-making process of businesses regarding e-commerce adoption. Furthermore, research by DiMaggio and Bonikowski (2008) indicates that digital inequality, driven by varying levels of digital literacy, exacerbates the challenges of economic inclusion in the digital age, reinforcing the study's findings that low digital literacy limits the potential benefits of e-commerce for small businesses. The reluctance to adopt e-commerce due to perceived complexity is also reflected in the work of Dijk and Hacker (2003), who note that the digital divide is often widened by fear of digital incompetence, particularly among less educated or older demographics. The study's observation that even employees lack the necessary digital skills is consistent with findings by James (2019), who argues that organizational digital competence is crucial for effective e-commerce integration. Furthermore, Oyelaran-Oyeyinka and Lal (2006) found that digital skills are directly linked to a business's ability to innovate and compete, indicating that low digital literacy can stifle growth. The preference for non-digital business methods due to a lack of digital literacy, as reported in this study, aligns with findings by Kurnia et al. (2015), who identified similar patterns in Southeast Asia, suggesting that digital literacy gaps are a global issue affecting e-commerce adoption. These findings collectively underscore the importance of targeted digital literacy programs and initiatives to bridge the skills gap and promote digital transformation among small businesses in Ethiopia and Uganda.

The finding that financial constraints significantly hinder e-commerce adoption among small businesses in Ethiopia and Uganda is consistent with the broader literature on digital transformation challenges in developing economies, where access to credit and digital financial services remains limited. Beck, Demirgüç-Kunt, and Maksimovic (2005) emphasize that access to finance is one of the most critical barriers to growth for small and medium-sized enterprises (SMEs) in developing countries,

affecting their ability to invest in digital technologies and e-commerce platforms. This observation is further supported by Ayyagari, Demirgüç-Kunt, and Maksimovic (2008), who found that SMEs' lack of access to affordable credit hampers innovation and digital adoption, reflecting the challenges faced by Ethiopian and Ugandan businesses. The study's finding on the high transaction fees associated with digital payments aligns with research by Mas and Morawczynski (2009), which highlights that the cost of digital transactions can deter the use of digital financial services among low-income users. Furthermore, Demirgüç-Kunt, Klapper, and Singer (2017) found that low levels of financial inclusion and the absence of adequate digital financial infrastructure are significant obstacles to e-commerce growth in developing regions. Research by Beck and Cull (2014) further indicates that even when financial services are available, they are often not tailored to the needs of small businesses, limiting their effectiveness in supporting e-commerce adoption. Moreover, Asongu and Odhiambo (2019) argue that financial barriers are compounded by regulatory inadequacies that prevent financial technology (FinTech) from thriving, which is also evident in Ethiopia and Uganda. Studies by Chiwira, Muyengwa, and Mufudza (2013) similarly point out that the reluctance of traditional financial institutions to lend to SMEs without collateral results in limited access to financial resources for digital investment. Furthermore, Hernandez and Roberts (2018) highlight that digital financial services are critical for enabling small businesses to manage cash flows and transactions online, and their unavailability restricts e-commerce potential. The preference for cash-based transactions due to a lack of trust in digital finance, as observed in this study, is corroborated by Donovan (2012), who discusses the socio-cultural reluctance to transition to digital payment systems in developing countries. These findings underscore the necessity of developing targeted financial products and policies to address the unique needs of small businesses in the context of digital transformation, as suggested by Karjaluo, Shaikh, and Leppäniemi (2019). The cumulative insights from these studies affirm that financial constraints and limited access to digital finance are critical barriers to the growth of e-commerce among small businesses in developing economies.

The finding that inconsistent regulatory frameworks and inadequate policy support are substantial barriers to e-commerce adoption among small businesses in Ethiopia and Uganda aligns with broader literature that highlights regulatory uncertainty as a critical impediment to digital transformation in developing countries. Kshetri (2008) emphasizes that regulatory challenges, such as unclear digital transaction laws and insufficient enforcement mechanisms, create an unpredictable business environment that deters small businesses from engaging in e-commerce. This observation is corroborated by Gelvanovska, Rogy, and Rossotto (2014), who argue that weak and fragmented digital policies in African countries fail to provide a conducive ecosystem for digital businesses to thrive. The study's finding on bureaucratic hurdles and lack of streamlined processes is echoed in research by Oxley and Yeung (2001), which shows that excessive bureaucracy and complex licensing requirements significantly impede digital market entry for SMEs. Furthermore, Eze,

Duan, and Chen (2014) found that supportive policies and clear regulatory frameworks are crucial for fostering a digital business environment, and their absence often results in low e-commerce uptake. Studies by Umezurike (2019) also highlight that inconsistent policy enforcement leads to regional disparities in digital adoption, creating uneven opportunities for businesses within the same country. Similarly, Ndung'u (2018) points out that the lack of harmonized digital policies across regions exacerbates these inequalities, making it difficult for small businesses to scale beyond local markets. The finding of limited awareness of existing digital regulations among business owners is consistent with the observations of Gikandi and Bloor (2010), who found that awareness and understanding of e-commerce policies are critical for compliance and adoption. Moreover, the absence of strong policy frameworks to address the specific needs of small businesses, as identified in the study, is supported by Muthinja and Chipeta (2018), who argue that targeted digital policies are necessary to stimulate growth among SMEs in emerging markets. The challenges surrounding data privacy, cybersecurity, and consumer protection regulations, which create distrust in digital transactions, are in line with findings by Zwolinski (2012), who notes that regulatory gaps in these areas can significantly deter digital engagement. These insights are further supported by Mutula and van Brakel (2006), who suggest that a lack of coherent regulatory strategies undermines efforts to promote e-commerce as a viable business model. Collectively, these studies affirm that regulatory inadequacies and poor policy support are critical barriers to e-commerce growth among small businesses in Ethiopia and Uganda, necessitating comprehensive regulatory reforms to foster a more enabling digital ecosystem.

The finding that socio-cultural factors significantly influence e-commerce adoption among small businesses in Ethiopia and Uganda is consistent with existing literature that identifies cultural attitudes, trust issues, and traditional business practices as major barriers to digital engagement in developing countries. As Choi and Geistfeld (2004) discuss, the lack of trust in online transactions is a pervasive issue, particularly in societies where face-to-face transactions and cash-based systems are deeply ingrained. This is further supported by Gefen, Karahanna, and Straub (2003), who emphasize that trust in e-commerce is shaped by both cultural norms and prior experiences with technology, affecting users' willingness to engage in digital transactions. Moreover, the preference for cash transactions over digital payments, as noted in the study, aligns with findings by Mbiti and Weil (2011), who show that in many African countries, cash is perceived as a more secure and reliable form of transaction compared to digital methods. This preference is often reinforced by low levels of consumer confidence in the security of digital payment systems, as highlighted by Mallat (2007), who argues that perceptions of risk and uncertainty play a critical role in the slow adoption of mobile payments. The study's observation that community-based trust networks are crucial for business operations is echoed in research by Kshetri (2010), who found that in environments with low institutional trust, businesses rely heavily on local networks to build credibility. The importance of word-of-mouth and community endorsements in influencing digital adoption is

similarly noted by Shaikh and Karjaluo (2016), who suggest that social influence is a significant determinant of technology acceptance in collectivist cultures. Furthermore, the study's mention of regional variations in digital readiness due to cultural differences corresponds with the findings of Apulu, Latham, and Moreton (2011), who state that local socio-cultural dynamics can either facilitate or inhibit the adoption of e-commerce technologies. The resistance to adopting e-commerce platforms, especially among older business owners, is also reflected in the work of Morris and Venkatesh (2000), who point out that age-related differences in technology acceptance are often exacerbated by cultural expectations and social norms. Additionally, the role of language barriers in limiting access to digital platforms, as identified in the study, finds support in the research of Azam (2007), who argues that language and literacy issues are significant obstacles to e-commerce adoption in non-English-speaking regions. Together, these insights suggest that addressing socio-cultural factors is crucial for fostering a more inclusive digital economy, as reinforced by Tan, Tyler, and Manica (2007), who advocate for culturally sensitive approaches to e-commerce promotion in diverse environments.

The finding that public-private partnerships (PPPs) and strategic interventions can play a pivotal role in overcoming barriers to e-commerce adoption among small businesses in Ethiopia and Uganda aligns with existing literature that underscores the importance of collaborative approaches to digital development. As noted by Prahalad and Hammond (2002), PPPs can effectively mobilize resources and expertise from both public and private sectors to address digital infrastructure gaps, a finding that resonates with the need for enhanced digital networks and skills training highlighted in this study. Similarly, studies by Kim, Lee, and Han (2013) indicate that government and private sector collaborations are crucial for providing affordable digital tools and platforms, which directly supports the study's emphasis on subsidizing digital tools for small businesses. Research by Ayo et al. (2011) also demonstrates that strategic partnerships between stakeholders can enhance digital literacy and create an enabling environment for digital entrepreneurship, a point echoed in this study's call for digital hubs and innovation centers. The study's focus on financial partnerships aligns with the findings of Beck, Demirgüç-Kunt, and Honohan (2009), who argue that collaboration between financial institutions and government bodies can increase access to credit and microfinance, which is critical for digital transformation. Further supporting this view, Bolarinwa and Olanrewaju (2021) suggest that PPPs can facilitate digital trust by promoting secure transaction systems and robust consumer protection frameworks, which is essential for boosting confidence in e-commerce. Research by Heeks (2010) on ICT4D (Information and Communication Technologies for Development) also points out that strategic interventions from international organizations can bridge regulatory gaps and help harmonize digital policies, an observation that complements this study's findings. Additionally, De Boer et al. (2019) highlight the role of community-based digital interventions in fostering grassroots digital adoption, reinforcing the need for culturally sensitive approaches as suggested in the study. The importance of effective coordination and continuous monitoring of

PPP initiatives, as mentioned in the study, is consistent with findings by Verhoest, Peters, and Bouckaert (2004), who emphasize that the success of PPPs depends on well-structured governance and accountability frameworks. Moreover, evidence from Chen, Chen, and Vertinsky (2016) shows that public-private collaborations are particularly effective when tailored to the unique needs of local markets, supporting the study's call for context-specific digital strategies. Collectively, these insights affirm the potential of PPPs and strategic interventions to create a more inclusive digital economy by addressing infrastructure, financial, and regulatory barriers that limit e-commerce adoption among small businesses in developing countries.

D. CONCLUSION

This study provides a comprehensive examination of the factors influencing e-commerce adoption among small businesses in Ethiopia and Uganda, highlighting the critical barriers and opportunities in these developing economies. The findings reveal that technological readiness and infrastructure deficiencies, including inadequate internet connectivity and high data costs, significantly impede digital adoption. Low levels of digital literacy among business owners and employees further exacerbate this issue, limiting the effective utilization of available digital tools and platforms. Financial constraints, particularly limited access to affordable credit and digital financial services, present another significant challenge, restricting small businesses from investing in necessary digital technologies. Inconsistent regulatory frameworks and a lack of cohesive policy support also create an unpredictable environment that discourages small businesses from engaging in e-commerce. Socio-cultural factors, such as trust issues with online transactions, a strong preference for cash-based dealings, and language barriers, further inhibit the shift to digital commerce. The study underscores the importance of public-private partnerships and strategic interventions in bridging these gaps, emphasizing the need for collaborative efforts to develop digital infrastructure, enhance digital skills, and provide financial support tailored to the unique needs of small businesses. Targeted policies that promote digital literacy, secure digital payment systems, and coherent regulatory frameworks are essential for creating a more inclusive digital economy. Additionally, fostering community-based digital initiatives and local trust networks could facilitate a smoother transition to e-commerce. This research contributes to the broader discourse on digital transformation by offering insights into the complexities of e-commerce adoption in Sub-Saharan Africa. The study calls for a holistic approach that integrates technological, financial, regulatory, and socio-cultural considerations to foster sustainable digital growth. Future research should explore the impact of specific digital policies and interventions on small business performance in diverse contexts. By addressing these multifaceted challenges, stakeholders can unlock the full potential of e-commerce, driving economic growth and development in Ethiopia, Uganda, and other similar developing economies.

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