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Barriers to Digital Transformation among Small Businesses in Tanzania: Evidence from Morogoro Municipality

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Abstract — Digital transformation is becoming more and more important for small businesses if they are to improve their efficiency, gain access to customers and stay competitive. Yet the capacity of small businesses to adopt and make effective use of digital technologies is hindered by a variety of financial, technological, skills-related and security-related obstacles. The present study looked at the barriers influencing the adoption of digital tools by small businesses in Morogoro Municipality, Tanzania. It was based on the Unified Theory of Acceptance and Use of Technology (UTAUT) and used a mixed-methods approach with a descriptive cross-sectional research design. Data were gathered from small business owners and managers through the use of structured questionnaires and semi-structured interviews. Out of the 318 questionnaires distributed, 276 valid responses were received, which gives a response rate of 86.79 per cent. The quantitative data were analysed using frequencies and percentages, while the qualitative responses were examined thematically. The results indicate that the lack of capital was the most significant barrier, cited by 92.7 per cent of the respondents, then came high internet costs (86.9 per cent), lack of digital skills (74.6 per cent), poor network connectivity (71.7 per cent), lack of training (67.0 per cent), fear of cybercrime (55.07 per cent) and lack of trust in online systems (52.9 per cent). The qualitative findings supported these results, particularly by pointing out the difficulty of buying digital devices, the problem of meeting ongoing internet costs, the difficulty of coping with unreliable connectivity and the challenge of building confidence in online transactions. The study demonstrates that digital transformation among small businesses in Morogoro Municipality is not merely a matter of willingness to use technology but is instead limited by insufficient facilitating conditions, especially in the areas of finance, infrastructure, skills and digital trust. The study suggests that integrated interventions be put in place which combine affordable finance, better internet infrastructure, practical digital skills training, increased cybersecurity awareness and stronger mechanisms for building trust in online systems.

Keywords— Digital Transformation; Small Businesses; Barriers to Digitalization; Information and Communication Technology (ICT); Digital Adoption; Technological Challenges; Financial Constraints; Digital Skills; Tanzania; Morogoro Municipality.

I. INTRODUCTION

Digital technologies have become increasingly important for the way small businesses operate and in terms of their competitiveness. Opportunities are available to companies through digital payments, social media platforms, online communication, mobile applications, and internet-based business services so that they can get in touch with customers, promote their products, handle payments, and improve their operational efficiency. Yet the fact that a business has access to technology does not mean that it will achieve a valuable digital transformation; even if small businesses have smart phones or internet services they may still have difficulty in using digital technologies in a consistent and productive manner.

This is especially significant in developing economies, since small businesses there generally have limited financial resources and encounter physical and skills limitations. In the current study, the obstacles noted among small businesses in Morogoro Municipality were mainly financial, technological, relating to knowledge and concerning security. It was found that 92.7 per cent of the respondents stated that they lacked capital, which therefore became the most commonly cited barrier. After that came high internet costs, cited by 86.9 per cent, and 74.6 per cent said they lacked digital skills. Other major concerns were poor network connectivity, the lack of training, fear of cybercrime and lack of trust in online systems.

The fact that this is so is important since it demonstrates that the digital divide existing among small businesses does not merely concern physical access to technology; it also relates to affordability, capability, infrastructure, and confidence in digital systems. That is why this study concentrates on the obstacles which stop small businesses from progressing beyond having basic access to the effective and sustained use of digital tools.

II. THEORETICAL AND EMPIRICAL REVIEW

1. Theoretical Review

The research is based on the Unified Theory of Acceptance and Use of Technology (UTAUT), which was developed by Venkatesh and others in 2003. This theory combines elements from a number of previously established technology-acceptance theories and states that the adoption of technology is primarily determined by performance expectancy, effort expectancy, social influence and facilitating conditions. The initial model was tested through empirical research in a variety of organisations and was shown to have a great deal of explanatory power with regard to users' intentions and their use of technology.

The expectation of performance is the degree to which a person thinks that using a technology will enhance their ability to carry out a task or improve business performance; for small businesses this can involve greater business efficiency, better communication with customers, more effective marketing, improved payment processing, and increased access to markets. The aspect of effort expectancy relates to how easy a person believes it is to learn and use a technology. This factor is especially important when business owners have only limited digital skills or when they have few opportunities for hands-on training. Social influence means the extent to which important people or groups encourage the use of a technology; in the case of small businesses, customers, competitors, suppliers, business networks and government organisations may affect decisions about adopting digital technology.

It is particularly important in this study to consider facilitating conditions since digital adoption involves more than just being willing to use technology; users need suitable resources, adequate infrastructure, the necessary skills and technical support. This is clearly shown by the evidence from Morogoro Municipality. Financial constraints prevent people from being able to buy devices and software, high internet bills limit ongoing use, bad connectivity interrupts digital activities, and insufficient training hampers effective use. Thus the findings offer a solid empirical foundation for understanding digital adoption barriers in terms of the facilitating-conditions dimension of UTAUT.

2. Empirical Review

Empirical studies have looked at the adoption of digital technology by small businesses and SMEs in Tanzania and in other developing countries. The studies have offered evidence regarding the level of adoption, the factors that influence it, and the barriers which affect the effective use of digital technologies.

Msuya, Mjema and Kundi (2018), 'ICT Adoption and Use in Tanzania SMEs', Tanzania. The research looked at the level of ICT adoption and use by SMEs in Tanzania. It was found that by 2014 the use of computer technology among SMEs had reached 80.1%, and the use of internet technology had gone above 56.6%. Over 53% of the SMEs used ICT as a strategic means of communication and marketing, and 47% stated that the use of ICT had helped to improve their competitiveness. The study thus showed that digital technologies were already playing an important role in enterprise communication, marketing and competitiveness in Tanzania.

Kabanda and Brown (2017), in their paper entitled "A Structuration Analysis of Small and Medium Enterprise (SME) Adoption of E-Commerce: The Case of Tanzania", focused on the adoption of e-commerce among small and medium enterprises in Tanzania and stressed the significance of the social and organisational context in determining how technology is adopted. The results indicated that the way SMEs interact with and make use of e-commerce cannot be understood merely in terms of the technology itself; on the contrary, adoption is affected by the context in which the businesses function. This point is pertinent to the current study since customers, competitors, suppliers and other stakeholders will have an impact on the decisions of small businesses to adopt digital tools.

Dafi and Chille (2023), "Factors for Acceptance of Electronic Fiscal Devices by Small and Medium Enterprises in Tanzania," Tanzania. The study examined factors influencing SMEs' acceptance of electronic fiscal devices using the Unified Theory of Acceptance and Use of Technology (UTAUT). The study collected data from 400 respondents and analysed them using descriptive statistics and multiple linear regression. The study incorporated perceived trust alongside UTAUT constructs. The findings show the relevance of technology-acceptance factors and trust in explaining Tanzanian SMEs' willingness to use digital systems. This supports the present study's consideration of perceived usefulness, ease of use and trust-related concerns in digital technology adoption.

Shirima (2023), "Barriers to Technology Adoption Among Tanzanian Businesses: An Empirical Analysis," Tanzania. The study looked at the empirical evidence that had been published between 2017 and 2022 in order to determine the barriers to technology adoption in Tanzanian businesses. It found that limited access to affordable and reliable infrastructure; a lack of technical and digital skills; financial limitations;

organisational resistance to change; and contextual and cultural problems were the main barriers. Even though the study was based on a review rather than on a primary survey carried out in a specific municipality, it does offer valuable evidence at the national level regarding the constraints influencing technology adoption in Tanzania.

The study by Girollet (2024), titled “Digital Divides among Microenterprises: Evidence from Sub-Saharan Africa”, looked at eight sub-Saharan African countries, one of which being Tanzania. It made use of business survey data for 3,300 firms in Senegal, Ghana, Nigeria, Rwanda, Kenya, Tanzania, Mozambique and South Africa. The research focused on the differences in access to and use of digital technology amongst informal businesses. The results indicated that mobile phones were widely in use, but more advanced applications such as internet services, mobile money and management software were still at an early stage of development. Moreover, the study found that digital inequalities were linked to a number of factors, such as the affordability of digital services, material access, skills, access to financial services and the characteristics of the business.

Quaye, Akon-Yamga, Akuffobea-Essilfie and Onumah (2024), ‘Technology Adoption, Competitiveness and New Market Access among SMEs in Ghana: What Are the Limiting Factors?’, Ghana. In order to look at the adoption of emerging technologies, the barriers to such adoption and the relationship between technology adoption and access to new markets, the researchers carried out a survey of 300 SMEs. The technologies taken into account in the study were the Internet of Things, artificial intelligence, e-commerce, mobile banking and social media. The results indicated a positive but weak association between the adoption of technology and access to new market opportunities. Moreover, the study pointed out the constraints which affect technology adoption, highlighting the need for a supportive environment for SMEs.

Katalla and Masele (2024), “Digital Technologies Usage for SMEs Businesses’ Continuity in Developing Countries Amidst COVID-19 Pandemic: Technology Strategies and Associated Challenges in Tanzania,” Dar es Salaam, Tanzania. The study looked at how service-sector SMEs used digital technologies during the COVID-19 pandemic. For this purpose, the researchers gave out questionnaires to SME managers in Dar es Salaam. The results showed that the SMEs had reached a satisfactory degree of integration of digital technology, but this level was not enough to ensure sustainable business continuity. The researchers suggested that more government support should be provided, such as financial aid and education, in order to promote the digitalisation of SMEs.

Utonga, Tundui and Mkuna (2026), "Modelling the Determinants of the Level of Digital Technology Adoption among Fruit Juice Processing SMEs in Tanzania", Dar es Salaam, Arusha and Mbeya, Tanzania. The researchers looked at the factors which determine various levels of digital technology adoption among 390 small and medium-sized enterprises in the fruit juice processing sector. It was found that 41.8 per cent of the SMEs had low adoption, 41.3 per cent had moderate adoption and 16.9 per cent had high adoption. Perceived usefulness was a significant factor in moving towards greater adoption, while competitive pressure had an impact on adoption, particularly at the low and moderate levels. Moreover, sufficient infrastructure was linked to progression beyond low adoption, although financial resources on their own did not lead to higher adoption.

Empirical studies indicate that a number of interconnected factors affect the adoption of digital technology by small businesses. In Tanzania it has been found that small enterprises are becoming more likely to make use of digital technologies for the purposes of communication, marketing, e-commerce, fiscal matters and to ensure business continuity, although the extent and intensity of this adoption are still uneven. The studies also point out financial constraints, infrastructure, digital skills, organisational circumstances, trust and the general business environment as key factors. Moreover, the findings from sub-Saharan Africa reveal that having access to a digital device does not always result in effective or advanced digital usage.

Yet a significant gap persists. Earlier studies in Tanzania have looked at ICT adoption at the national level, as well as e-commerce, electronic fiscal devices, digital usage related to COVID-19, and the adoption of digital technology in specific sectors. There is relatively little empirical evidence that focuses in particular on small businesses in Morogoro Municipality and that investigates the combined effects of finance, internet costs, connectivity, digital skills, training, cybersecurity, and trust. The present study addresses this gap by looking at these issues within the particular context of Morogoro municipality.

The results of the current study support and build upon earlier evidence. In Morogoro Municipality, 92.7% of the respondents stated that they lacked capital, 86.9% noted that internet costs were high, 74.6% said they lacked digital skills, 71.7% reported poor network connection, 67.0% mentioned a lack of training, 55.07% expressed a fear of cybercrime, and 52.9% lacked trust in online systems. These findings indicate that digital adoption cannot be explained by willingness alone; instead, it depends on whether small businesses possess the financial, infrastructural, human and institutional conditions needed to

maintain the use of digital technology. This interpretation is in line with the UTAUT framework, especially in relation to facilitating conditions. Moreover, the findings regarding usefulness, skills, social influences, and trust offer further empirical insight into the process of adoption in Morogoro.

III. METHODOLOGY

The study employed an integrated methods approach and had a descriptive cross-sectional research design. The population from which it drew its sample consisted of small business owners and managers who were operating in certain wards of Morogoro Municipality. The number of respondents to be included was calculated with the use of Yamane's formula. The sample was first selected by stratification in order to achieve representation across the different business categories and wards, and then convenience sampling was used to include those people who were available and willing to take part.

Data was gathered through the use of structured questionnaires and semi-structured interviews. Out of the 318 questionnaires that were distributed, 276 were completed and sent back, which gave a response rate of 86.79 per cent. The quantitative data was analysed using descriptive statistics, with a special focus on frequencies and percentages, and the qualitative data was subjected to thematic analysis.

The article is concerned with the third research aim of the dissertation, which is to identify the difficulties that small businesses encounter when adopting digital tools in Morogoro Municipality.

IV. RESULTS

1. Financial Constraints
The shortage of capital was the biggest obstacle to the adoption of digital tools. 256 people gave this as a difficulty, which is 92.7 per cent. This indicates that a large number of small businesses do not have enough financial resources to buy digital equipment, to obtain software applications, or to keep up their internet services.

The qualitative findings support this conclusion. People stated that even though they recognised the value of digital technologies, the cost of buying smartphones, computers, and internet packages made it difficult for them to adopt them.

The fact shown proves that affordability is a basic element of digital inclusion, since for small businesses which have limited working capital their expenditure on digital technologies has to compete with other urgent business requirements.

2. High Internet Costs
High internet costs were reported by 240 respondents, which is 86.9% of the sample. They stated that expensive data bundles had increased their operating costs and had discouraged them from continuing to use online business platforms.

The fact indicates that having access to the internet by itself is not enough to ensure real digital adoption; a business might have network access yet still be unable to use digital services regularly if it is too costly to maintain the connection.

3. Lack of Digital Skills
206 people identified a lack of digital skills, which amounts to 74.6 per cent. This shows that a large number of small business owners and employees do not have the knowledge and abilities needed to use digital systems effectively.

The qualitative findings also showed that a lack of digital literacy lowered people's confidence when using technology and as a result led to underuse of the digital opportunities that were available. This is especially true of more advanced digital applications since these require a higher level of technical competence than basic communication or mobile payment services.

4. Poor Network Connectivity
198 people stated that they had poor network connectivity, which amounted to 71.7 per cent. They said that the unreliable connections interfered with online transactions, communication with customers, and digital marketing activities.

The fact shown underscores how essential a reliable digital infrastructure is for small business operations. If connectivity is poor, businesses are unable to depend regularly on digital platforms for communication, payments, and marketing.

5. Lack of Training
67.0 per cent of the respondents, amounting to 185 people, stated that they had received no training. The data indicate that many entrepreneurs have few opportunities to obtain structured and practical training in digital technologies, so some business owners have to depend mainly on self-learning, which might not be sufficient for them to use more advanced digital applications effectively.

6. Cybersecurity Concerns and Lack of Trust

152 people (55.07 per cent) said that they were afraid of cybercrime, and 146 of them (52.9 per cent) named a lack of trust in online systems as a barrier. The respondents were concerned regarding online fraud, hacking, the theft of financial information and unauthorised access to business data. The fact is that digital adoption includes not only financial and infrastructural factors but also aspects relating to behaviour and confidence. Businesses might delay adopting online payments and other digital services when they think that the risks involved are greater than the expected benefits.

V. DISCUSSION

The study shows that the obstacles facing small businesses in Morogoro Municipality when it comes to digital transformation are closely linked rather than separate. Difficulty caused by financial limitations means that it is hard to buy the equipment needed and to keep internet access; because of their lack of skills they are unable to make use of the technologies available; weak connectivity disrupts their digital activities; and worries about cybersecurity lead to a lack of confidence in online systems.

The fact that financial constraints are so significant is in agreement with earlier findings by the World Bank (2023) and the OECD (2022), two sources which point out that limited financial resources act as a continuous barrier to digital transformation for small enterprises. This study goes beyond that by demonstrating that financial constraints are especially important in the case of Morogoro Municipality.

The result regarding digital skills is also in agreement with Njoroge and Gathungu (2019), who saw a lack of technological competence as a major obstacle to technology adoption by small and medium-sized enterprises. UNCTAD (2022) reached a similar conclusion by stressing the importance of digital literacy and training for enabling entrepreneurs to take an active part in the digital economy.

The cybersecurity findings are in agreement with Kshetri (2021), who noted that worries regarding cybercrime and online fraud may lead businesses to avoid using digital payment systems and online platforms. In the case of Morogoro these concerns are important since trust affects entrepreneurs' willingness to move on from a basic level of technology use to greater involvement with online financial and business systems.

It is important to note that the study advances current knowledge by showing that greater awareness of digital technologies does not mean that the barriers to adoption disappear. Even if small business owners recognise the value of technology, they may still be unable to adopt it due to financial constraints, high internet costs, inadequate skills, limitations of the infrastructure, and worries regarding digital security.

Looking from the standpoint of UTAUT, these results highlight the significance of facilitating conditions. It cannot be explained alone that entrepreneurs will adopt technology on the basis of their perception of it as useful or easy to use; they also need access to finance, reliable infrastructure, the relevant skills, technical support and secure digital environments.

VI. CONCLUSION

The study finds that a mix of financial, infrastructural, skills-related and security barriers hinders digital transformation in small businesses in Morogoro Municipality, financial constraints and high internet bills being the most significant obstacles, while weak digital skills, poor network connectivity and a lack of training further limit the effective use of technology.

The findings also demonstrate that cybersecurity concerns and limited trust in online systems constitute important behavioural barriers. Therefore, increasing access to digital technologies without addressing affordability, skills, infrastructure and trust is unlikely to produce sustainable digital transformation.

The study as a whole shows that the digital transformation of small businesses calls for a supportive ecosystem rather than for separate interventions; financial accessibility, affordable connectivity, digital capability and digital trust all need to be dealt with at the same time.

Recommendations

The study suggests that both the government and local authorities should broaden the range of affordable financing options available to small businesses which wish to invest in digital technologies. These options might involve low-interest loans, grants aimed at particular sectors and other suitable forms of financial assistance.

Telecommunications providers and the appropriate regulatory authorities should aim at improving network reliability and at lowering the cost of internet services for small businesses; reliable and affordable connectivity would then allow businesses to use digital platforms more consistently.

Digital skills development should also be improved by means of practical training programmes which are designed to meet

the needs of small businesses. The training ought to go beyond basic computer literacy and should also cover areas such as digital marketing, online payments, cybersecurity, e-commerce and digital financial management.

Above all, more emphasis should be placed on cybersecurity awareness and on building digital trust. Small business owners should be given practical advice concerning the protection of their business accounts, how to spot fraud and how to carry out digital transactions safely. If trust is increased, businesses will feel more confident about expanding their use of digital technologies.

Contribution of the Study

The main contribution of this study is to provide contextual evidence of the obstacles which small businesses in Morogoro Municipality encounter. Even though earlier research has pointed out financial constraints, inadequate skills, limitations of infrastructure and concerns regarding cybersecurity as barriers to digital transformation, this study shows how these barriers function together in a particular Tanzanian municipal environment.

The study thus shows the practical significance of facilitating conditions when applying UTAUT in a small-business setting characterised by limited resources. Moreover, it offers evidence which can assist policymakers and business-support organisations in designing interventions that deal with the constraints encountered by small enterprises, as opposed to concentrating solely on improving access to technology.

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