The digital financial inclusion of micro, small and medium-sized enterprises of the COMESA region in electronic business during the COVID-19 pandemic

Forbes Makudza, Reason Masengu, and Lucia Mandongwe

The digital financial inclusion of micro, small and medium-sized enterprises of the COMESA region in electronic business during the COVID-19 pandemic

November 2022

Forbes Makudza, Manicaland State University of Applied Sciences

Reason Masengu, Middle East College

Lucia Mandongwe, Manicaland State University of Applied Sciences

Table of Contents

List of Tables

List of Figures

List of Abbreviations

MENA: Middle East and North Africa (MENA)

E-business: Electronic business

DFI: Digital financial inclusion

EBA: Electronic business adoption

COMESA: Common Market for Eastern and Southern Africa

MSME: Micro, Small and Medium Enterprises

SCAUE: Social Commerce Acceptance, Usage and Effect

UTAUT: Unified Theory of Acceptance and Use of Technology

GDP: Gross domestic product

e-governance: Electronic government

e-learning: Electronic learning

ISP: Internet Service Provider

IXP: Exchange Point

1. Executive Summary

The study was driven by the need to improve e-business usage and digital financial inclusion of the Micro, Small and Medium Enterprises (MSMEs) of the Common Market for Eastern and Southern Africa (COMESA) region. These MSMEs were negatively affected by COVID-19 pandemic and were struggling to remain viable as the way to conduct business shifted from traditional channels to e-business channels. The main objective of the study was to develop and test a framework which augments digital financial inclusion through e-business usage among MSMEs in lagging segments of the COMESA region. Three specific objectives were followed: to examine the dynamic trend of e-business adoption among MSMEs of the COMESA region, to analyze the factors affecting the adoption of e-business amongst MSMEs of the COMESA region, and to examine the impact of e-business adoption on digital financial inclusion among MSMEs of the COMESA region. The development of the study variables was governed by the technology adoption models. The study clustered all 21 COMESA countries into five clusters using gross domestic product as the base. From each of the five clusters, one country was selected at random for analysis. Thus, the sampling frame was made up of five countries namely Eswatini, Kenya, Rwanda, Zambia and Zimbabwe. Data was collected using a structured questionnaire in a cross sectional survey. A cross sectional survey involves collecting data from a given population only once at a specific time/period. The study results showed that the dynamic trend of e-business adoption among MSMEs of the COMESA region showed a positive trend towards the adoption of e-business tools/platforms and technologies. This has been shown by the increasing number of MSMEs who are using e-platforms, number of gadgets used, and uses of e-business platforms among countries. The results further showed that the key determinants of e-commerce adoption in the COMESA region are not fully explained by the theoretical factors of technology adoption. There was no statistical evidence to support that e-business is driven by simplicity of e-platforms (simplicity), value of e-business (utility), social support (social), e-business infrastructure (Infrastructure) or intrinsic factors (Intrinsic). The study however found that years in business, years using e-business platforms and country-based differences have an impact on the decisions to adopt e-business. On the contrary, the results also showed that e-business adoption does not have a significant association with digital financial services in the region. The study therefore recommends for the support of the establishment and development of e-business models which align with the needs of MSMEs at the base of the economy; and to drive demand and support of the on-boarding of micro-merchants onto formal e-business platforms. The study informs policy making on digital financial inclusion and e-business through country specific policies as a blanket approach in COMESA may not yield positive results due to differences in enabling environments among COMESA member states.

Key Terms: Digital Financial Inclusion, e-business, e-business adoption, MSMEs

2. Introduction

This study examines the relationships among e-business adoption determinants, e-business adoption and digital financial inclusion in COMESA which can be leveraged on during and even after the COVID-19 pandemic to augment business performance of MSMEs. The study notions that augmenting e-business adoption determinants drive acceptance of e-business models by MSMEs of the COMESA region. At the same time, the study posits that e-business acceptance is a strong predictor of digital financial inclusion. Additionally, the study advocates for the establishment and development of e-business models which align with the needs of MSMEs at the base of the economy. There is also a need for a holistic approach (be it formal and or informal) to digital financial inclusion. This can be done by means of working with e-business market players to promote technology solutions which cater for the poor and enable online business opportunities, using technology incubators and accelerators, training and development of start-up tools.

 The International Telecommunication Union (ITU)'s Connect2Recover initiative aims at strengthening digital infrastructures and digital ecosystems as beneficiary countries adjust to COVID-19 and remain resilient in times of disaster. "Connect2Recover Research Competition" whose objective is to strengthen research focus, build a global research community, and promote knowledge sharing on digital inclusion and resilience to build back better with broadband following pandemics, selected the study proposal as one of fifteen winning proposals. In April 2022, this study was presented in one of three virtual information sessions on Connect2Recover Research Competition Papers was held focusing on Africa.

This report is presented in sections and subsections. This section presents the background and objectives of the study, whilst the next section reviews literature, followed by methodology, results presentation, discussion, and conclusion.

2.1 Background and Rationale of the Study

Africa accounts for 15% of the world's human population. However, only 6.2% of the world's Internet subscribers are Africans (Statista, 2021). Using notable measurable indicators of Internet and digital technological adoption (such as Internet Service Provider (ISP) subscriptions, the overall number of hosts, bandwidth, and Internet Exchange Point (IXP) traffic), Africa is still lagging as compared to other continents (International Telecommunications Union, 2020). A conspicuous internal digital divide is evident as countries like Kenya have 5G network whilst Zimbabwe and Mozambique struggle to host 4G networks (Statista, 2021). The business environment was not spared from low digital acceptance in Africa. The COVID-19 pandemic even exacerbated the situation as real businesses moved from brick and mortar to electronic systems. The lack of agility in e-business system caused the loss of four million jobs in Africa as COVID-19 induced business volatility escalates (Statista, 2021).

MSMEs are integral in economic advancement, employment creation, and invention. Reliable evidence has indicated that digital financial inclusion is indispensable to a business's success (Abdullahi, 2020; Yahia, et al., 2020; Idun, 2021). Digital financial inclusion embraces all electronic ingenuities, from the demand to the supply angles in the financial sector (Ali, 2017). The digital financial inclusion of MSMEs of the

COMESA region into electronic business during and post the COVID-19 pandemic is very important at this point (Ilin, et al., 2017; Zhong, et al., 2021). The emergence of the COVID-19 pandemic came as a huge blow and generated a historical disturbance to COMESA's main agenda of advancing into a huge economic and trading entity. Since e-business is a contributory tool to any business' success, to avert this hovering pandemic, there is a need for MSMEs in COMESA to make concerted efforts to ensure they embrace e-business as a matter of urgency into its transaction cycles.

The study sought to augment digital financial inclusion through e-business usage among MSMEs in COMESA region. The major unique contribution of the study laid in rejuvenating business performance during and post the COVID-19 era through e-business adoption. That would enhance job creation and enhancement of wealth. The study sought to examine the dynamics of digital financial inclusion and e-business in African countries in the COMESA region. The factors hindering effective digital financial inclusion and e-business were empirically examined. A cross-comparison of the digital divide within COMESA members was also analyzed and evaluated. The effect of this study was the substantiation of a digital financial inclusion model which borders on e-business and enhances job creation.

2.2 The Scope of the Study

The study aimed to develop and test a framework which augments digital financial inclusion through e-business usage among MSMEs in COMESA region.

2.2.1 Specific Objectives

The study sought to achieve the following specific objectives:

1. To examine the dynamic trend of e-business adoption among MSMEs of the COMESA region.
2. To analyze the factors affecting the adoption of e-business amongst MSMEs of the COMESA region.
3. To examine the impact of e-business adoption on digital financial inclusion among MSMEs of the COMESA region.

2.2.2 Research Questions

1. What is the dynamic trend of e-business adoption among MSMEs of the COMESA region?
2. What are the factors affecting the adoption of e-business amongst MSMEs of the COMESA region?
3. What is the impact of e-business adoption on digital financial inclusion among MSMEs of the COMESA region?

3. Literature Review

3.1 Understanding Digital financial Inclusion

Financial inclusion is understood as the practice of ensuring that human beings, families and firms in a society are accorded admittance to formal financial services (Bede Uzoma et al., 2020; Khera et al., 2021; Piñera, 2021). Digital financial inclusion is a complex practice (Vasile & Panait, 2021). It entails the use of cost-effective digital

methods to provide a variety of official financial services tailored to the needs of currently financially excluded and vulnerable populations. (Adegbite & Machethe, 2020; Agyekum et al., 2016; Ahmed & Chinembiri, 2021; Baker, 2021).

Digital financial inclusion is the use of digital financial services to spearhead financial inclusion. These financial services are prudently supplied at reasonable cost to customers, and at the same time, are sustainable for the providers (Agyekum et al., 2016; Ina Ibor et al., 2017; Shipalana, 2019). The digital financial services on the other hand comprise of a wide array of financial services retrieved and delivered through digital platforms (Asian Development Bank, 2020; Osakwe, 2020). The services may be payments, borrowings, savings, settlements, and insurance. Mobile financial services are also included.

3.1.1 Importance and elements of Digital Financial Inclusion

Financial products and services have traditionally excluded many of the world's most vulnerable populations, low-income individual and families, those facing fragile situations and small businesses. Digital financial inclusion consists of three elements which are the digital transactional platform, retail agent, and the device (Baker, 2021; Ina Ibor et al., 2017). During the lockdown period, all over the world, e-business was the only option to perform business (Vasile & Panait, 2021). Digital financial inclusion was favoured the most during the COVID-19 pandemic and had to take centre stage (Nasubo, 2021). The need to embrace digital financial inclusion is driven by the low transaction costs, promptness and flexibility, thereby reducing the challenges of the cash economy.

Additionally, this financial inclusion on a digital platform has been complimented as a vehicle for addressing Sustainable Development Goals (SDGs) especially SDG 1 – No Poverty, SDG 2 – Zero Hunger; SDG 8 – Decent work and Economic growth, and finally SDG 9 – Industry, Innovation and Infrastructure. It offers gradual and supportive remedies to confront poverty and income inequality hovering across Africa (Shipalana, 2019). It is beyond reasonable doubt that digital financial inclusion should be indispensable with all governments and company structures (Baker, 2021; David-West, 2016). Consequently, an all-encompassing, inclusive development and advancement of financial services to vulnerable segments of the society will be achieved.

3.1.2 Challenges in Digital Financial Inclusion

Digital financial inclusion is associated with several challenges (Vasile & Panait, 2021). Such challenges are highly apparent in developing countries that are awash with a substantial number of informal sectors, digital divides, and income inequalities. Despite the improvement in processing of transactions, it has been argued that money laundering and terrorist financing risks are high with e-business and digital financial inclusion (C. Bongomin et al., 2018; G. O. C. Bongomin et al., 2020; Evans, 2018; Nasubo, 2021). One can also emphasise the need to perform risk assessment when transacting with third parties. Several scholars have agreed that consumers' attitude towards digitalization is essential in the progression of digital financial inclusion.

3.1.3 Digital Financial Inclusion in the Middle of the COVID-19 Pandemic

The recurring COVID-19 induced lockdowns and curfews, which were meant to curtail the spread of the virus, necessitated vulnerable MSMEs to take prompt action in terms of adopting e-business. The COVID-19 predicament was an eye opener to perform e-business and digitalise financial inclusion in all spheres of life, including in MSMEs (Ayadi & Shaban, 2020; Khera et al., 2021; Nasubo, 2021). The aim will be to ensure MSMEs' competitiveness and survival in this current environment is intensified. To remain in business, in this highly globalized and technologically advanced world, digital financial services are no longer an option but a requisite. More so, the importance of digital financial inclusion for the achievement of Sustainable Development Goals 1, 2, 8 and 9 should not be underestimated.

In Africa and the COMESA region, there is a paucity of digital financial services, and hence, limited digital financial inclusion (Adegbite & Machethe, 2020; Ayadi & Shaban, 2020; Baker, 2021; Machasio, 2020). Such a scenario should not go unheeded. Several MSMEs in COMESA are so vulnerable technologically, to the extent that they face difficulties in penetrating international markets. The COVID-19 pandemic came as a shock and exacerbated the existing challenges in vulnerable MSMEs of COMESA (Ahmed & Chinembiri, 2021). Indeed, digital financial inclusion of susceptible MSMEs of the COMESA region is very urgent and long overdue.

3.2 Conceptualization of E-business

The term e-business is used in a wide range of settings and includes the complete online process of producing, advertising, retailing, transporting, servicing and payment for products and services (Brzozowska, 2015; Hasanat et al., 2020; Oliveira et al., 2010; Rasyid et al., 2020). Raymond and Bergeron (2018) define electronic-business (e-business) as a new revolution where creativity is needed to fully exploit the aptitudes of Internet technology in a specific business situation. Sheung (2014) agrees with Raymond and Bergeron (2018) on the role of Internet capabilities, and they add that e-business built vital strengths of the organization that makes a huge competitive advantage among the players in the market. Conversely, Bhaskar (2021) views e-business as an information system or application which is embedded into business procedures with the use of both technology and new commercial tactics for doing business online.

E-business is not static as it is affected by the dynamism of technology and must be continuously reviewed to remain relevant and offer the best service delivery (Li and Chang, 2014). E-business is characterized by the dynamism of applications, scientific improvements, willingness of the organization to allocate resources for specific causes and the anticipated evolution of an organization. E-business strategy is the creation and implementation of a plan for a business to conduct business electronically (Beheshti & Salehi-Sangari, 2007). This strategy provides organizations with competitive advantage (Holsapple and Singh, 2019; Apigian et al., 2015). E-business has been commended for improving three main business processes which are production, customer focus and internal management process. It benefits internal and external business processes and encompasses communication among departments, subsidiaries and branches.

3.2.1 Benefits of E-business

E-business emerged to bring benefits to the business world. Laudon and Laudon (2010) found out that e-business promoted business efficiency and effectiveness; whilst Kienen (2019) opines that e-business brought about seamless linkages between suppliers and focal firms. This removed traditional barriers between suppliers and their customers as business could be done in a more transparent manner. Other scholars posit that e-business is essential in enhancing the speed of jobs cards, reducing defective products, improving product quality, reduced cost of production, improved customer service management, reduced redundancy, improved factory layout and reduced storage costs because of improved inventory management (Jentzsch & Miniotas, 2019; Lallana, 2020; Raymond & Bergeron, 2018).

3.2.2 Barriers to e-business Adoption in Developing Countries.

In Sri-Lanka, it was noted that MSMEs lag behind and are often skeptical about the uptake of e-business because of both internal and external barriers. These barriers include a lack of skills, security, cultural and political barriers (Kapurubandara & Lawson, 2016). In Indonesia, a similar study was conducted by Janita and Chong (2013) and they identified poor infrastructure, lack of management motivation, lack of online policies, and lack of power to influence partners as the main reasons why adoption is very poor in this nation; yet it has the largest proportion of SMEs in South East Asia.

Studies were also conducted in Nigeria, and it was revealed that the age of the companies contributed to the acceptance of e-business. Newly formed companies were more prone to e-business adoption (Olatokun & Bankole., 2011). A similar study was conducted in Nigeria by Agwu (2014) and it revealed that the factors that affected the adoption of e-business were consumer readiness, IT skill shortages and Internet connectivity issues. Agwu and Murray (2015) made a follow up research in different parts of Nigeria and discovered that lack of an e-commerce regulatory security framework, technical skills and infrastructure were the main issues inhibiting the adoption of e-business.

Erumi-Esin and Heeks (2015) also conducted research on e-business adoption in sub-Saharan women-owned entities and their findings indicated that perceived usefulness and market drivers are the key components of having the adoption, but the factors that hindered implementation are lack of infrastructure and resources. From the above studies, there is great potential for e-business in the developing nations, but the main issues of infrastructure, sound government policies and resources must be addressed in order to see the adoption of electronic business. Surry, Ensminger and Haab, (2015) in their study found the following to be key barriers to adoption and implementation of e-business: absence of technological infrastructure, weak organizational effort, technology dissatisfaction, and employees' complacency. Other barriers were identified by Elloumi (2014) who raised the issues of high cost, poor planning, and the absence of a business strategy. Elloumi (2014), also found in his studies that even renowned companies at times failed to be fully automated due to the high cost of technology.

3.3 E-business Adoption and Digital Financial Inclusion

Khera et al. (2021) established that digital financial inclusion positively influences economic growth. The study also identified factors which influence digital financial inclusion such as infrastructure, financial and digital literacy, as well as the value of institutions. Hence, e-business adoption has a positive relationship with digital financial inclusion. Additionally, Sahay and Čihák (2020) as cited by Khera, et al. (2021) suggest that e-business adoption improves digital financial inclusion, which in turn reduces income inequality among members of the society. Vale, et al. (2021) dedicated efforts on a study in which they were assessing financial inclusion as a paradigm shift in the post pandemic period, focusing on the digital divide and gender gap. From the study, it was noted that the age of the microentrepreneurs is one the key determinants of financial inclusion and adoption is country-specific.

Lyons and Kass-Hanna (2021) concluded that financial literacy positively impacts on saving behavior, and lowers the likelihood of borrowing, especially from informal sources. On the same note, Bongomin et al. (2018) exposed a significant and positive moderating effect of social networks in the nexus between mobile money usage and financial inclusion in rural Uganda. Besides, it was also established that social networks promote financial inclusion in emerging economies, such as those in Sub-Saharan Africa.

Mader (2016) assessed whether it is moral to digitalize the disadvantaged people's money. The study notes that corporations are increasingly working toward digitalizing poor people's money in order to eliminate the use of cash. These corporations seek to capitalise on everyday transaction costs, to leverage big data generated by the poor for greater control of their finances. The study concluded that digital financial inclusion should be extended to the disadvantaged segments of the society. However, a question was posed whether digital financial inclusion leads to economic empowerment. According to Maditinos and Chatzoudes (2014), the successful implementation of e-business depends on the size of the firm, technical expertise as well as knowledge accumulation and sharing. This in turn will determine the level of digital financial inclusion. In addition, digital financial inclusion has been celebrated for playing an immense role in supporting the achievement of the SDGs by Bokkens (2021).

3.4 Theories of Technology Adoption

Theory remains the main guiding principle in the development of knowledge. Technology adoption is informed by several theories and underpinning concepts. Empirical research done to understand adoption of e-business have favored the Social Commerce Acceptance, Usage and Effect (SCAUE) model (Makudza, Sandada & Madzikanda, 2021). The SCAUE model fuses the contributions of nine previously known theories of technology acceptance and adoption. Key contributors to the SCAUE model include the Technology Acceptance Model (TAM) (Davies, 1986), Theory of Reasoned Action (TRA or ToRA) (Fishbein and Ajzen, 1967), Unified Theory of Acceptance and Use of Technology model (UTAUT) (Venkatesh et al., 2003). These previous theories indicate that Information technology (IT) acceptance or adoption is determined by the end-users' acceptance behaviour.

The SCAUE model has five e-business acceptance drivers. These are the determinants of e-business acceptance. They predict the extent to which businesses would adopt e-business. The model acknowledges that not all five drivers should be present for e-business to be adopted. However, for e-business to be easily accepted as a way of life, the model hypothesizes that all five drivers should have a positive strong impact. This means that the e-business platform should present more value to consumers (Utility), it should be user friendly (Simplicity), the socio-cultural factors should be supportive (Social), whilst the individual's personal drive should also be pro-usage (Intrinsic), and the hardware and software aspects of the system must be easily available (Infrastructural).

The model further assumes that not all e-business drivers should have the same impact. This is because users come from different socio-cultural backgrounds where beliefs and norms vary (Social driver). Therefore, consumers have different perceptions of the value and simplicity of e-business platforms (Intrinsic, Utility and Simplicity drivers). With the same token, not all users are exposed to the same digital devices. This is especially true of Africa, and other developing nations. Even within the same national boundary, some areas have better digital infrastructure than others (rural areas versus urban cities, for example). Therefore, the effect of facilitating conditions among users vary from one user to the other (Infrastructural Driver).

3.4.1 Hypotheses Development

Digital financial inclusion is the dependent variable of this study, which as per insights from Gibbs and Kraemer (2004) is proxied by the scope of e-business adoption by MSMEs. The study investigates five (5) predictor variables of e-business adoption, which were drawn from the SCAUE model. These predictor variables, which acted as the context factors, were (1) Utility/ perceived benefits factors, (2) Simplicity/ Compatibility factors, (3) Socio-cultural/ environmental factors, (4) Human Intrinsic factors and (5) Infrastructural factors. The study posits that e-business predictor factors have a direct association with e-business adoption; whilst e-business adoption directly predicts digital financial inclusion.

Guided by the foregoing theoretical grounding, the study presents the following hypotheses:

H_1: Utility context factors are positively associated with e-business adoption decisions.
H_2: Simplicity context factors are positively associated with e-business adoption decisions.
H_3: Social context factors are positively associated with e-business adoption decisions.
H_4: Infrastructure context factors are positively associated with e-business adoption decisions.
H_5: Intrinsic context factors are positively associated with e-business adoption decisions.
H_6: E-business adoption has a significant and positive impact on digital financial inclusion.

4. Research Methodology

4.1 Research Epistemological Approach

The epistemological approach to this study rests upon the positivist philosophy which alludes that all genuine knowledge is either true by definition or positive – meaning a posteriori fact is derived by reason and logic from the sensory experience. The positivism approach owes a lot to scientific approaches to research (Saunders et al., 2009), it incorporates rigorous statistical analysis in a standardized and rigid fashion.

4.2 Research Design

This study used the descripto-explanatory research design. The descripto-explanatory study adopted refers to "a study whose purpose is both descriptive and explanatory where, usually, description is the precursor to explanation" (Saunders et al., 2009). The study offered a description of the e-business adoption trends among COMESA members, and a description of the determinants of e-business adoption. However, to test the framework which augments digital financial inclusion through e-business usage, there was a need for explanatory designs in explaining the cause-and-effect associations, impact, and directions of the relationship/s between e-business adoption and digital financial inclusion.

4.3 Target Population

The study targeted MSMEs in the COMESA region. The COMESA region has 21 countries as shown in Table 4.1. The COMESA (2013) definition of MSMEs was used to categorize MSMEs based on the number of employees. Based on that definition, there were approximately 5 million MSMEs in the Region, contributing between 50% and 70% of COMESA's GDP. Table 4.2 shows the categorization of MSMEs which the study used.

Table 4. 1 COMESA member states

COMESA MEMBER STATES			
1. Burundi	6. Eritrea	11. Madagascar	16. Somalia
2. Comoros	7. Eswatini	12. Malawi	17. Sudan
3. Congo D.R	8. Ethiopia	13. Mauritius	18. Tunisia
4. Djibouti	9. Kenya	14. Rwanda	19. Uganda
5. Egypt	10. Libya	15. Seychelles	20. Zambia
			21. Zimbabwe

Source (COMESA, 2021).
Notes to the table: COMESA has twenty-one countries which all come from the eastern and southern parts of Africa.

Table 4. 2 Classification of MSMEs

Type of Enterprise(s)	No. of Employees
Micro	2 - 9
Small	10 - 50
Medium	51-150

Notes to the table: *Classification of MSMEs was based on the number of employees. The greater the number of the employees, the bigger the enterprise.*

4.4 Sampling Procedure

The study could not collect data from all COMESA countries due to time constraints. To overcome that limitation, sampling was employed. To generate a representative sample which may be generalised to all the countries in COMESA, the study used cluster sampling whereby all countries in the target population were grouped into five clusters. The basis for clusterisation was the real gross domestic product (GDP) rate issued by COMESA (2020). Cluster sampling is a probability sampling procedure which is best used to study large, spread-out populations (Saunders et al., 2016). Table 4.3 shows the five clusters of the study.

Table 4. 3 Research Clusters

CLUSTER A	CLUSTER B	CLUSTER C	CLUSTER D	CLUSTER E
Burundi	Comoros	Madagascar	Egypt, Arab Rep.	Somalia
Tunisia	Sudan	Djibouti	Ethiopia	Libya
Zambia	Eswatini	Kenya	Rwanda	Seychelles
Congo, Dem. Rep.	Eritrea	Malawi	Uganda	Zimbabwe
Source: COMESA (2020)				Mauritius

Notes to the table: *All 21 countries were clustered into homogeneous groups using GDP. Countries with related GDP were assumed to be with the same macro-economic conditions which influence e-business and digital financial inclusion.*

Guided by Krejcie and Morgan (1970), at 95% confidence level and 5% margin of error, a minimum sample size of 384 will be collected from each cluster. The study used both primary (participant observation, and questionnaires) and secondary data sources. Questionnaires were distributed to Micro, Small and Medium Enterprises.

4.5 Piloting

Pilot-testing of the questionnaire was done in five countries namely Eswatini, Kenya, Rwanda, Zambia, and Zimbabwe. These countries have varied telecommunication, Internet, and digital infrastructure, thereby exposing the instrument to different types of economies in Africa. Owing to the ongoing COVID-19 pandemic, an online survey was done in collaboration with trained research consultants and enumerators. After the pilot analysis, the questionnaire was revised and corrected for the actual survey.

4.6 Analytical Framework

The quantitative survey was carried out among MSMEs in the COMESA region (Eswatini, Kenya, Rwanda, Zambia, Zimbabwe). A questionnaire was rolled out with three (3) information blocks; (1) the demographic characteristics of each

respondent/firm (number of years in business, number of years using e-business, the platforms used, etc.) (2) targeted questions on digital financial inclusion and (3) questions on e-business usage by MSMEs (a list of 53 questions with the degree of responses measured using a five-point Likert scale with options ranging from "strongly agree" to "strongly disagree". There was an equal distribution of the sample size across all strata, with an expected sample of 384.

To understand the dynamic trend of e-business adoption among MSMEs of the COMESA region (research objective 1) this study used descriptive statistics and an overview of the existing trends of e-business adoption among MSMEs was presented in the form charts and graphs. That was analyzed based on the level of access, availability, and use of the digital tools for e-business. The results from these statistics guide on the direction and intensity of use of the available tools for e-business.

To analyze the factors affecting the adoption of e-business amongst MSMEs of the COMESA region, the following statistical analysis were done. The following subsections present concepts and measures which are critical in carrying out the statistical analysis.

4.6.1 Key Variables Descriptions

Table 4. 4 Expected effects of the independent variables of e-business adoption

Variable (s)	Expected effect
Utility factors	+
Simplicity factors	+
Social factors	+/-
Infrastructural factors	+
Intrinsic factors	+

Source: Primary Data (2022)

Notes to the table: Hypothesised directions of the associations between e-business adoption determinants and e-business.

E-Business time (*e_businessTime*) – a continuous variable measuring the number of years the firm has been utilizing e-business platforms. We expect a positive influence on e-business adoption as shown in Table 4.4.

Year of operation *(Yrs_operation)* – a categorical variable measuring the number of years the firm has been in operation with category values ranging between 1 (below 1 year) and 6 (above 12 years). We expect a positive effect on e-business adoption.

Control Variables - The use and adoption of e-business is affected by other extraneous variables. Therefore, we controlled for these effects through incorporating country level dummies (for Eswatini, Kenya, Rwanda, Zambia, and Zimbabwe) with one country as the baseline. The results can be positive or negative between countries.

4.6.1.1 The Logit Regression Analysis

Since we have a binary dependent variable, using the ordinary least squares (OLS) method will give estimates which are biased and inconsistent because the

assumptions underlying the OLS are not fulfilled, for example, the assumption of homoscedasticity. Thus, to avoid this bias, we employed a binary choice model (logistic regression) to estimate the determinants of e-business adoption by MSMEs. We considered our case where the response is binary, assuming only two values 0 and 1, as follows:

$$y_i = \begin{cases} 0, & otherwise \\ 1, & adopt\ e-business \end{cases}$$

The logit model can be expressed as:

$$Y_i = \frac{1}{1+e^{-y}} \qquad\qquad 1.1$$

Where Y is defined as:

$$Y = \beta_0 + \beta_1 X_{ij} + \cdots + \beta_k X_k \qquad\qquad 1.2$$

Y = the probability of a particular outcome with values between 0 and 1

X's= explanatory variables

β's = regression coefficients to be estimated.

Thus, we will estimate the logit model given as:

$$Logit\ (P_i) = ln\left(\frac{P_i}{1-P_i}\right) = \beta_0 + \beta_1 X_{ij} + \cdots + \beta_k X_k + \mu_i \qquad\qquad 1.3$$

4.6.1.2 To Test the Extent of Digital Financial Inclusion Among MSMEs of the COMESA Region (Research Objective Number 3).

To test the hypothesis that e-business adoption significantly and positively impacts on digital financial inclusion among MSMEs of the COMESA region, we employed structural equation modelling techniques to produce unbiased estimates. It has been argued empirically that digital financial inclusion/access affect e-business adoption for MSMEs in developing countries. Similarly, it is possible that e-business adoption can also affect the level of digital financial inclusion by MSMEs leading to endogeneity bias/ problem. Therefore, applying ordinary least square will give biased, and inconsistent estimates. The study will use a two-stage least squares technique or the instrumental variable technique to resolve for the bias.

4.6.1.3 Two-stage Least Squares (2SLS) Regression of Digital Financial 1nclusion

Assuming that Digital Financial Inclusion (Y_{ij}) is regressed on a vector of characteristics $(X_{1_{ij}})$, e-adoption (P_{ij}), and a vector of other factors not included in the model (error term) ε_{ij} such that;

$$Y_{ij} = \beta_0 + \beta_1 X_{1_{ij}} + \beta_2 P_{ij} + \varepsilon_{ij} \qquad\qquad 2.1$$

$where\ \beta_0, \beta_1, \beta_2$ are parameters to be etimated in the model.

Also, assuming that the variable P_{ij} is correlated with one or more variables in the error term ε_{ij}. If we attempt to use OLS method to predict Y_{ij} we will get a biased and inconsistent estimate $\widehat{\beta_2}$. This situation occurs when there are unobserved factors influencing both P_{ij} and the outcome of interest Y_{ij}. If this is the case, P_{ij} is said to be endogenous.

In that case we need to specify the Linear Probability (LPM) model for e-adoption P_{ij};

$$P_{ij} = \alpha_0 + \alpha_1 X_{1_{ij}} + \alpha_2 Z_{ij} + \mu_{ij} \qquad\qquad 2.2$$

where Z_{ij} is another variable (instrumental variable) which does not affect digital financial inclusion directly but through e-adoption P_{ij} and is also not affected by other excluded factors in the model. We estimate equation (2) using OLS and obtain the estimated coefficients and generate predicted values $\hat{P}_{ij}$ which is not influenced by the error term, μ_{ij} , i.e., it is not influenced by the unobservable characteristics that are the source of the endogeneity. Thus, the IV 2SLS model will substitute P_{ij} with the predicted value $\hat{P}_{ij}$ using the ivregress command with adjusted standard errors. Thus, the digital financial inclusion equation will be given as;

$$Y_{ij} = \beta_0 + \beta_1 X_{1_{ij}} + \beta_2 \hat{P}_{ij} + \varepsilon_{ij} \qquad\qquad 2.3$$

Estimating equation 2.3 will give unbiased and consistent estimates of the model.

5. Results

5.1 Introduction

This section presents and analyses the data of MSMEs regarding the adoption of e-business. The primary purpose of this study was to identify the determinant factors in relation to the adoption of MSMEs' e-business in the COMESA region. This section is constructed as follows: Section one summarizes the descriptive statistics of the data and an overview of the existing trends of e-business adoption among MSMEs; Section two presents the analysis of the factors affecting the adoption of e-Business amongst MSMEs; the next section examines the effects of e-business adoption on digital financial inclusion in the COMESA region. The final section will present the result discussions and policy recommendations.

5.2 Summary of the Sample Statistics

The overal response rate from the respondents was 63% which was way above the 60% threshold. This response rate is confirmed by researchers (Baruch, 1999; Morton et al., 2012; Saunders et al., 2012) as acceptable in quantitative research. Response rate varied by country ranging from 33% to 74%. The major reason behind the low response rate in Zambia was reluctance by the participants to respond to questionnaires in English language. This is one of the study limitation, however the limitation is insignificant since it only occurred in one cluster. The final sample size for analysis is 1, 212 as presented in Table 5.1.

Table 5.1 Sample representation by country

Nationality	Frequency (n)	Required Sample	% N	Response rate %
Eswatini	215	384	20	0.56
Kenya	276	384	20	0.72
Rwanda	284	384	20	0.74
Zambia	125	384	20	0.33
Zimbabwe	312	384	20	0.81
Total	1 212	1 920	100	0.63

Other descriptive variables

		Country					
		Eswatini	Kenya	Rwanda	Zambia	Zimbabwe	Total
Gender	Male	49.53	47.81	57.75	45.97	63.67	54.35
Age (mean)	(Years)	32.4	36.2	34.1	34.1	34.8	34.5

N= Required Sample; n= Realized Sample

Source: Primary Data (2022)

Notes to the table: *Males and females of different age categories participated in this study from all five clusters which the study targeted.*

The was an approximately equal distribution of the sample based on gender in all countries sampled with differences less than 10% except in Zimbabwe where more than 60% were male firm owners. Adding on to that, there was no significant difference between mean ages of the firm owners across all genders with the overall mean age of 34.5 years old. These results are an indication that data was collected across heterogenious sample, hence they provide a relevant conclusion in understanding e-business and digital financial inclusion.

5.3 The Dynamic Trend Of E-business Adoption Among MSMEs of the COMESA Region

5.3.1 Education and E-business Adoption

Education level of the firm owner is a critical factor which affects e-business adoption in many developing countries. The more educated the firm owner is the more likely he/she is to adopt digital technologies into his/her business. The results presented in Figure 5.1. below shows that on average the owners had attained a diploma certificate with people in Zambia and Zimbabwe demonstrating higher levels of literacy.
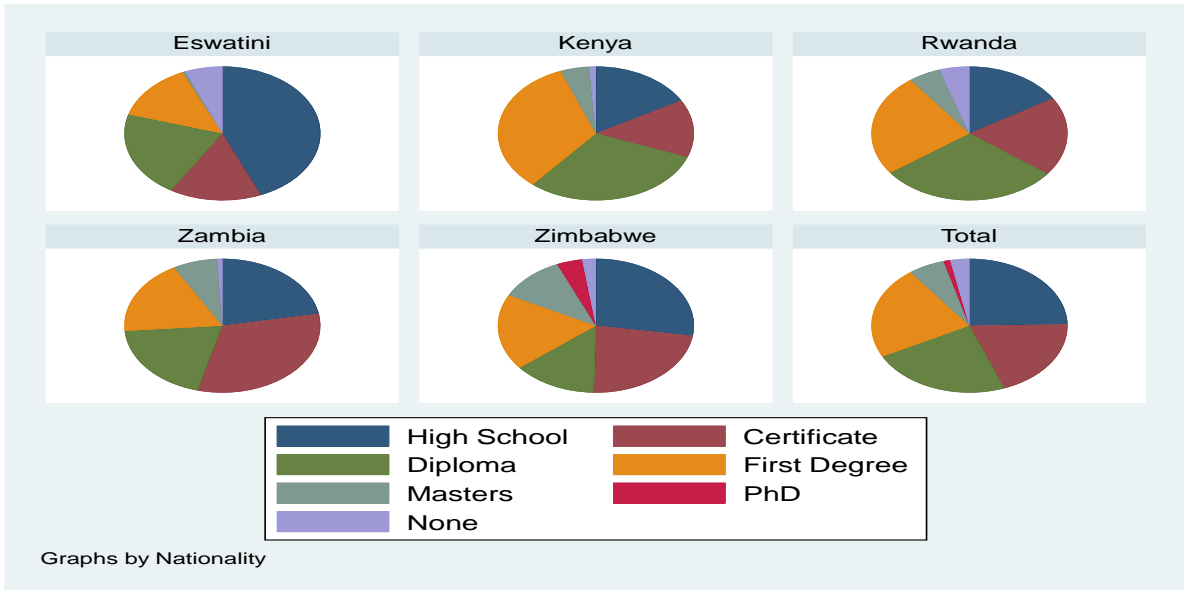
Figure 5.1 Education of Firm Owners by Country

Source: Primary Data (2022)

The study found that more educated respondents were adopting e-business as compared to the less educated ones. There is an inverse relationship from the data between increase in level of education and e-business adoption. People who have attained at least high school level education tend to adopt e-business better than those with higher educational qualifications. For instance, Figure 5.2 shows that the higher the level of education the more the adoption of e-business. Thus, individuals who have attained lower levels of education are the most users of e-busines technologies in the region as compared to those with higher educational levels. Comparatively to the educated, participants with "no academic education" are less likely to adopt e-business. This is indicated by the gradual decline of "No" and gradual increase of "Yes" as education level increases, as shown in Figure 5.2
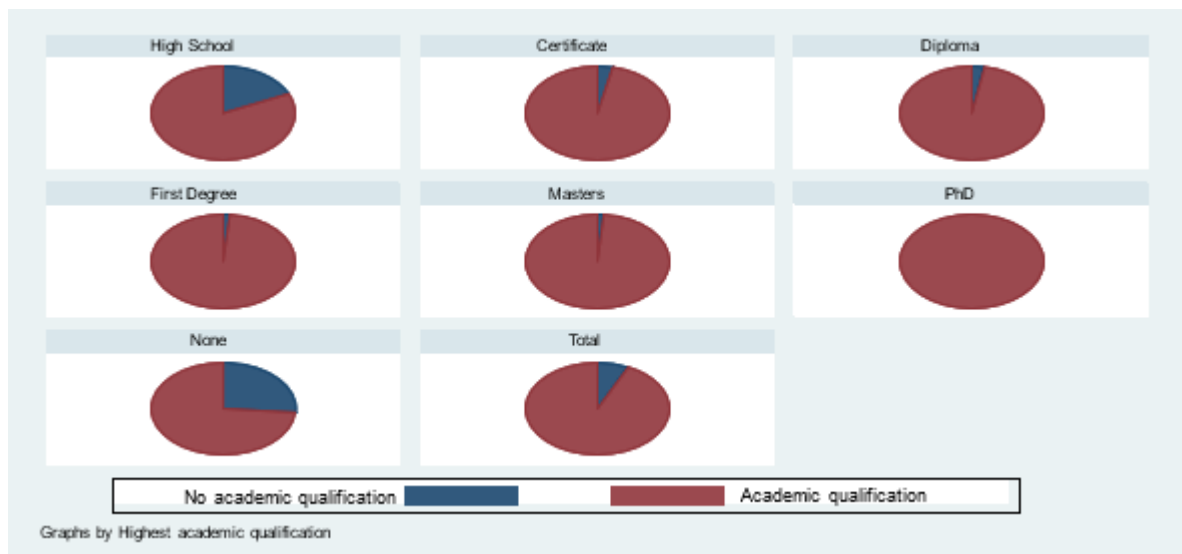
Figure 5.2 Association Between E-adoption and Education of Firm Owners

Figure 5.3 shows different platforms of e-business which were used in the region. The main platforms of e-business in use were websites, social media, mobile money applications and the Internet. It appears that the more respondents become educated, there is greater tendency that they move away from over dependency on social media towards websites. Hence, social media, mobile applications and websites were regarded as the most adopted e-business platforms by many firms.
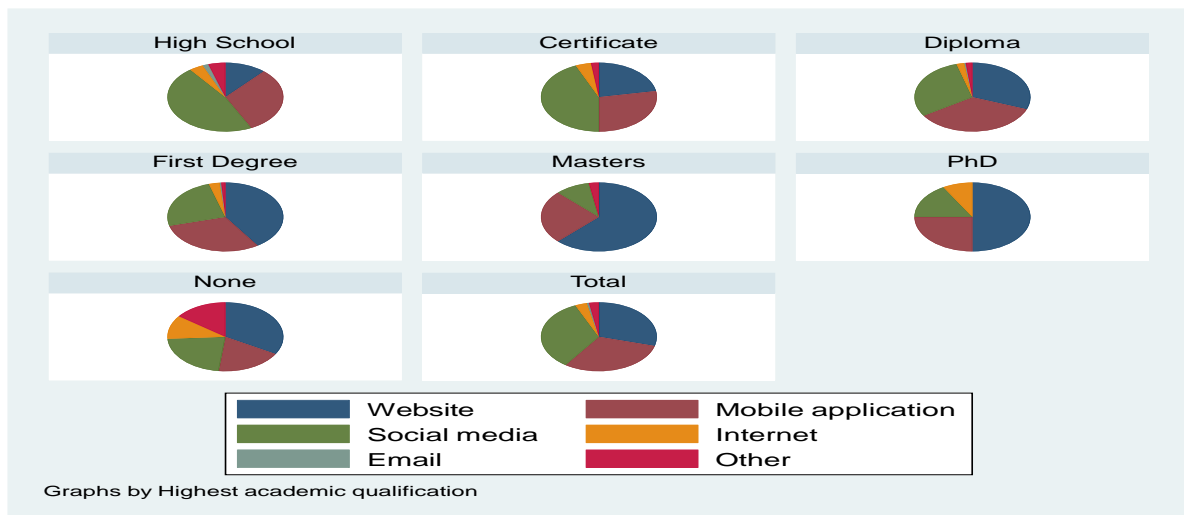
Figure 5.3 Association Between Education and E-business Platforms Used

Notes to the figure: Social media, mobile applications and websites were used by all respondents regardless of the level of education.

5.3.2 E-Business Adoption and Years in Operation

Figure 5.4 shows that overall, more than 93% of the MSMEs respondents had adopted e-business, with the largest proportion of adopters found in Kenya, Rwanda and Zambia. Countries in Southern Africa (Zimbabwe and Eswatini) had a slightly less adoption rate as compared to countries in East Africa (Kenya and Rwanda).
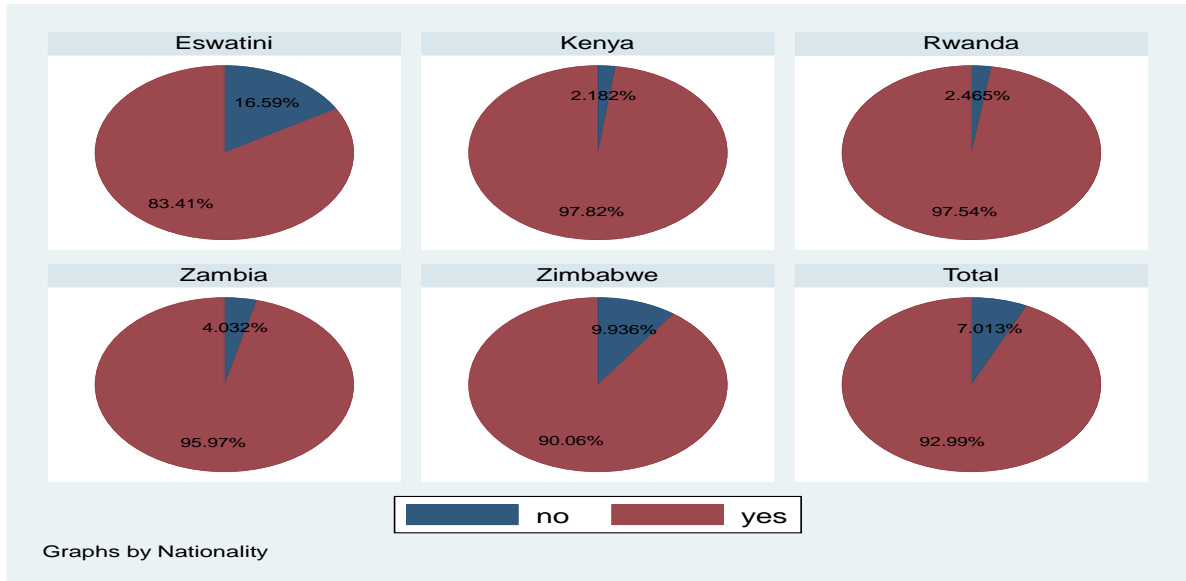
Figure 5.4 E-Business Adoption by MSMEs Across COMESA Countries

Source: Primary Data (2022)

Notes to the figure: *'No' means that respondents do not use e-business*
'Yes' means respondents use e-business

In addition, the results of the study showed that many MSMEs have only been using e-commerce for less than 10 years, with a maximum of around 5 years of experience. As Figure 5.5 shows, very few MSMEs use e-commerce for more than 10 years. This trend is the same for all 5 countries, with Eswatini having the lowest rate at 83%. However, there are differences among MSMEs who have been in e-commerce the longest, with Eswatini having an average time of 2.5 years, while the other four countries have an average of 4 years.

Figure 5.6 shows an almost similar pattern in the number of years that both groups have been in e-business when disaggregated by gender. The results indicate that there is no gender-based lags in the adoption of e-business by MSMEs. It is consistent with the view that formal education increases the use of technology that enables or requires workers to perform higher-order tasks, unlike those that involve routine workplace activities.
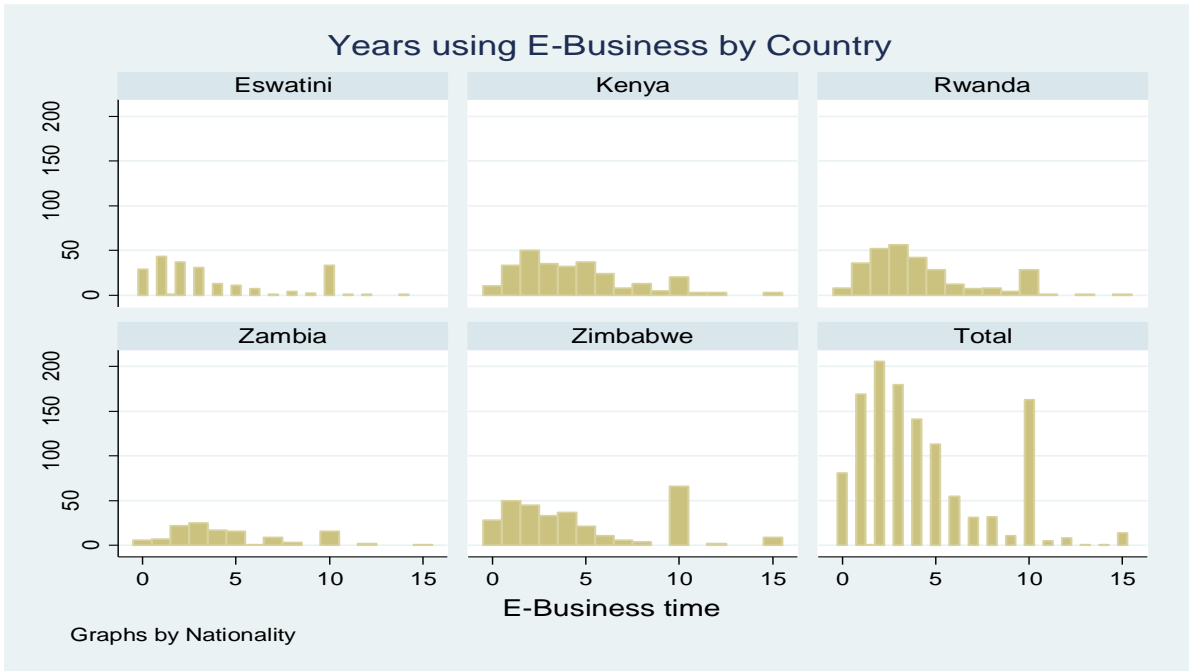
Figure 5.5 Number of Years in e-Business Across MSMEs in Different Countries

Source: Primary Data (2022)
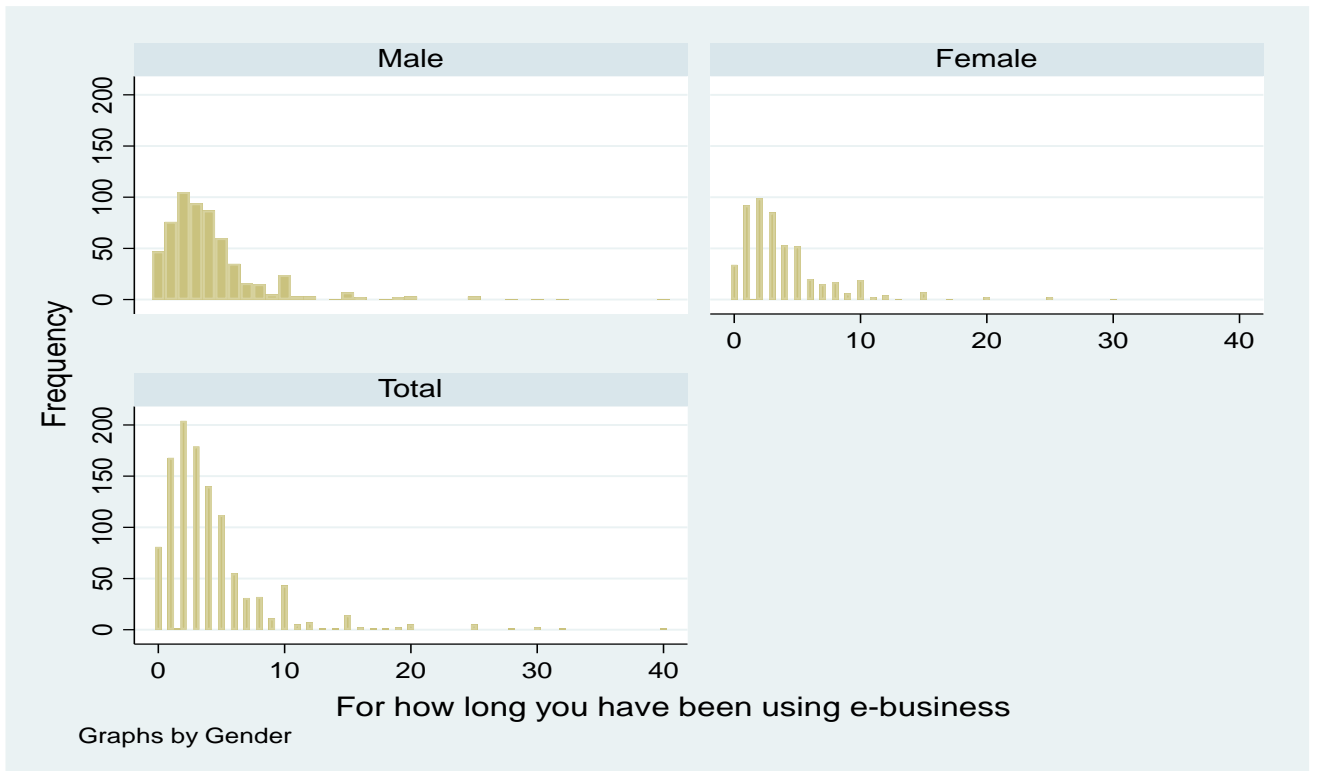
Figure 5.6 Number of Years in E-business Across Gender of Business Owners
Source: Primary Data (2022)

5.3.3 E-Business platform usage over years of business operations

In assessing the e-business platforms being used by firms in the countries, Figure 5.7 presents the choice of e-business platforms for businesses at different years of operating experience. The results show that social media is the most used e-business platform by newer MSMEs with operating experience of less than 1 year, then the use of social media declines gradually as the businesses gain more years of operating experience. Conversely, the use of websites grows gradually as the business gains more operating experience. Mobile applications are fairly used by MSMEs at all ages of operating experience, but consistently higher in the mid range. On the other hand, platforms like emails, the Internet and others remain minimally utilized by all MSMEs at different ages of operation.The proportion of MSMEs that do not use any e-business platform decreases with increasing operating experience. In overall terms, websites, mobile applications and social media are the most commonly used e-business platforms by MSMEs in the COMESA region, although their intensity of use varies at different ages of operating experience.

Graphs by For how long have you been in business?
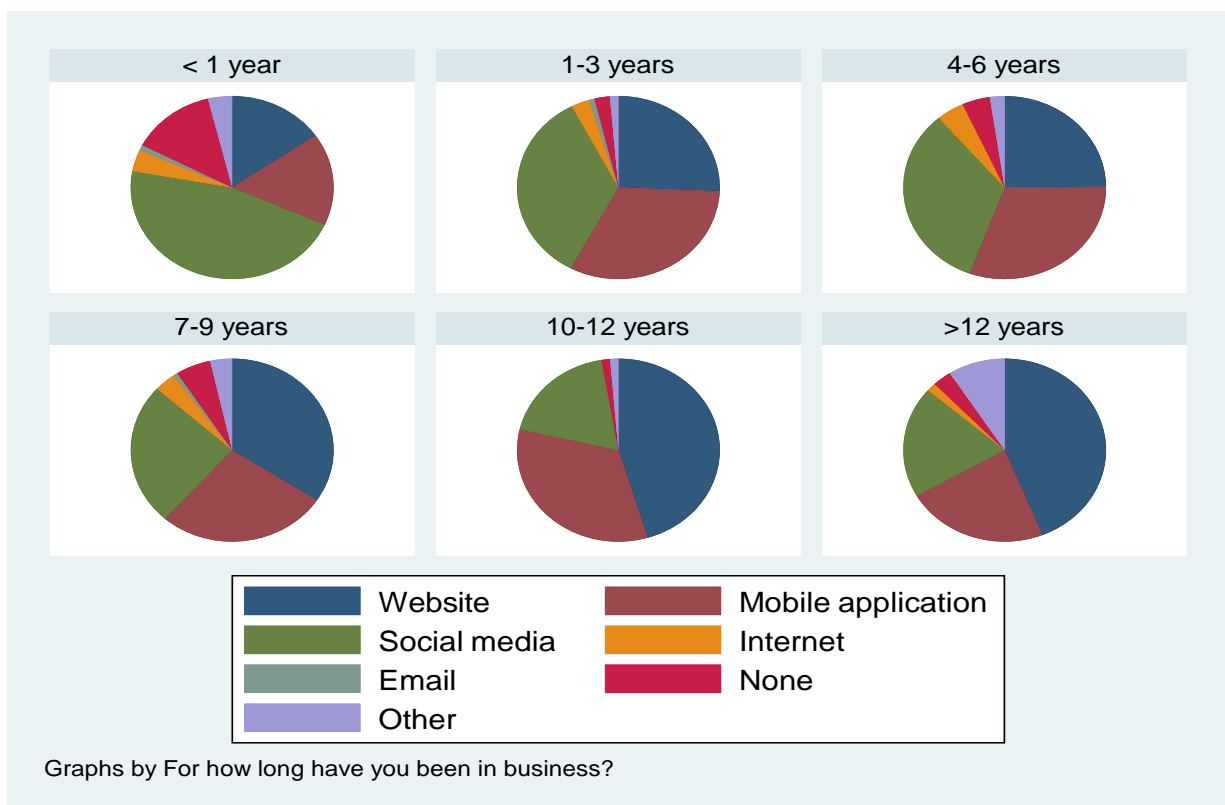
Figure 5.7 E-business Platforms Used by MSMEs' Over Years of Operations.

Source: Primary Data (2022)

Moreover, results presented in Figure 5.8 display the different gadgets used to access the different e-business platforms by MSMEs. The graph shows that social media and mobile application are dominant on all platforms except non-smartphone platforms. On the other hand, mobile applications are dominantly used on all platforms except computers. Websites are surprisingly more dominantly used on non-smartphone and smartphone platforms than computers.

The general expectation would be that websites are commonly used on computers. Use of the Internet showed an increase with the use of tablets and computers as is the common expectation.
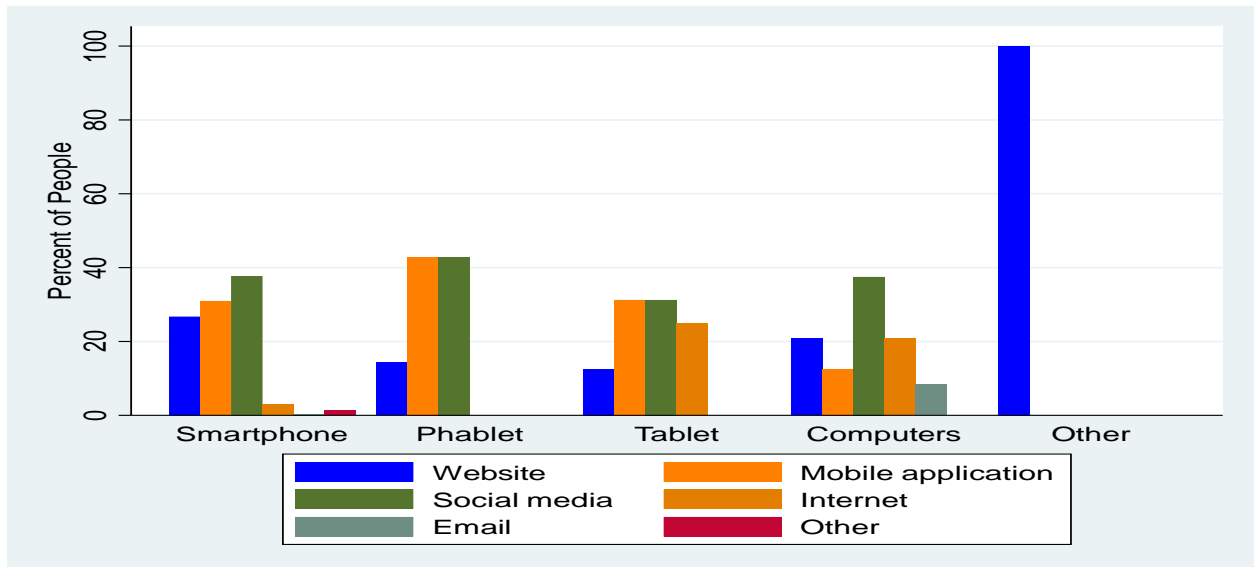
Figure 5.8 Different gadgets used to access different e-business platforms by MSMEs

Source: Primary Data (2022)

MSMEs use different e-business platforms for different purposes including doing business with customers, another company or final user of a product. The results in Figure 5.9 shows that the dominant uses of the e-business platforms are for doing business with customers (business-to-customer, B2C) and doing business with another company (business-to-business, B2B). Doing business with customers is the dominant use on mobile applications, social media, Internet, and emails. Doing business with another company is more dominant on websites and mobile applications. Doing business with a final user of a product (business-to-consumer) has a significant share only on other platforms other than the common website, social media, mobile applications, email, and the Internet. The results in Figure 5.9 show that e-business platforms are dominantly used for doing business with other customers and with other companies respectively. The businesses are engaging with these stakeholders predominantly through mobile applications, social media, Internet, websites. The figure further highlights that companies engage with each other through websites and mobile applications whilst business transactions with final users of a product has significant shares only on other platforms.
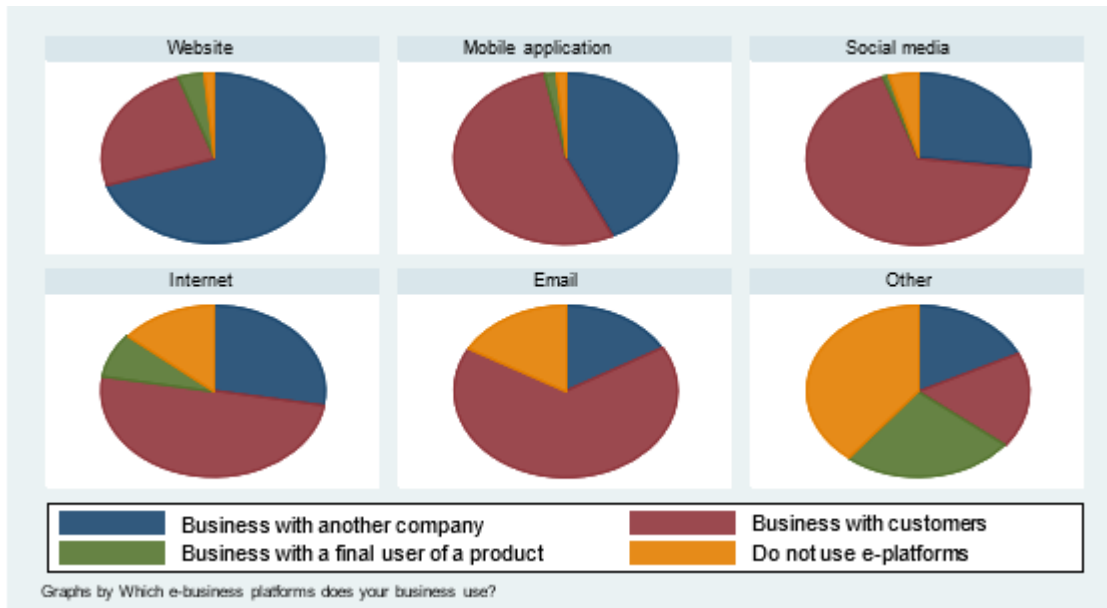
Figure 5.9 Purposes on which E-business Platforms are Used by MSMEs

Source: Primary Data (2022)

Notes to the table: e-business was dominantly used for doing business with other customers (B2C) and with other companies (B2B).

The results presented in Figure 5.10 show that the bulk of the MSMEs use emails, websites, mobile applications, the Internet, and social media to source for raw materials. Looking for business marketing is the next common use for mobile applications, social media, Internet, and email. MSMEs also use mostly emails, websites, mobile applications, the Internet, and social media to search for suppliers. However, the MSMEs do not use the e-business platforms for other aspects like evaluating suppliers' offers, improving efficiency, delivery of customer orders, handling customers' issues and designing electronic products.
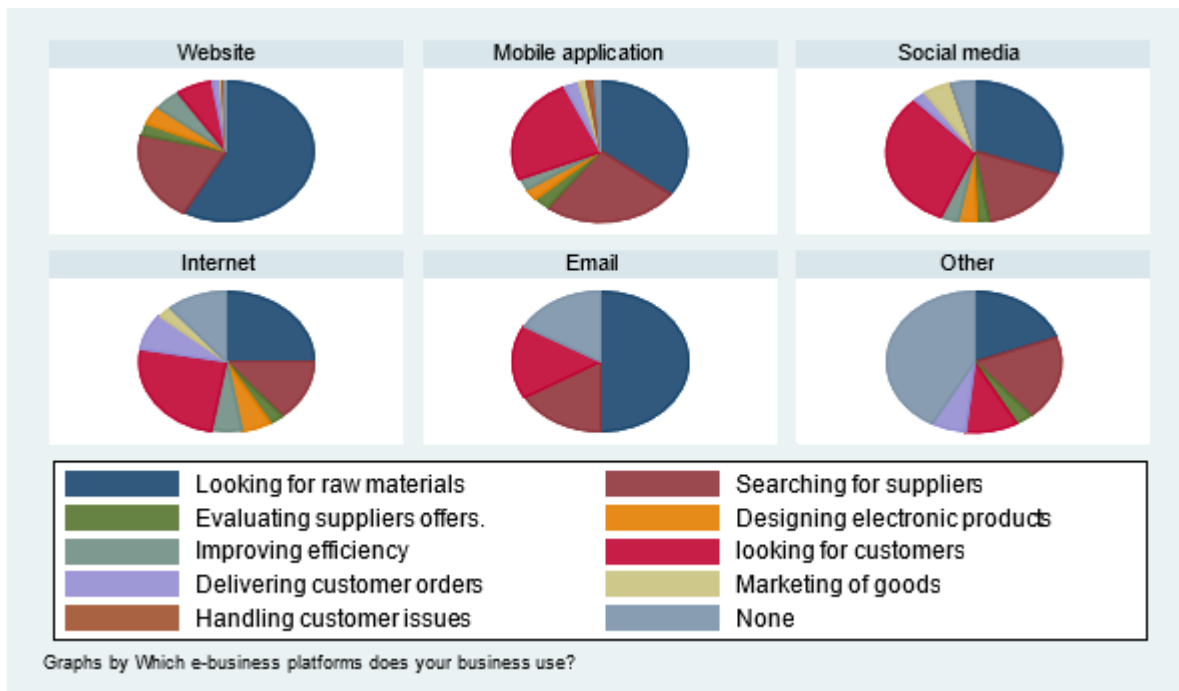
Figure 5.10 Use of E-business Platforms by MSMEs

Source: Primary Data (2022)

5.3.4 Access to and Use of Financial Institutions

In addition to that, Figure 5.11 below shows the proportion of MSMEs that have access to Internet banking across the 5 countries. In Zambia, Rwanda and Kenya, at least 70% of the MSMEs having access to Internet banking. Close to 60% of MSMEs have access to Internet banking in Eswatini. However, on the other hand Zimbabwe is the only country where a majority of MSMEs do not have access to Internet banking. The overall trend shows that Internet banking is accessible to MSMEs in the COMESA region even though countries like Zimbabwe still need to focus on efforts to ensure that more MSMEs can easily access Internet banking. This result is closely related to the adoption of digital programs for financial management as shown in Figure 5.12. Countries that have a majority of MSMEs with access to Internet banking i.e., Zambia, Rwanda and Kenya are the same countries that have significant proportions of MSMEs that adopted digital programs for financial management. Eswatini and Zimbabwe on the other hand have a majority of MSMEs lagging in the adoption of digital programs for financial management. The improvement in access to Internet banking in these countries may help to facilitate accelerated adoption of digital programs for financial management.
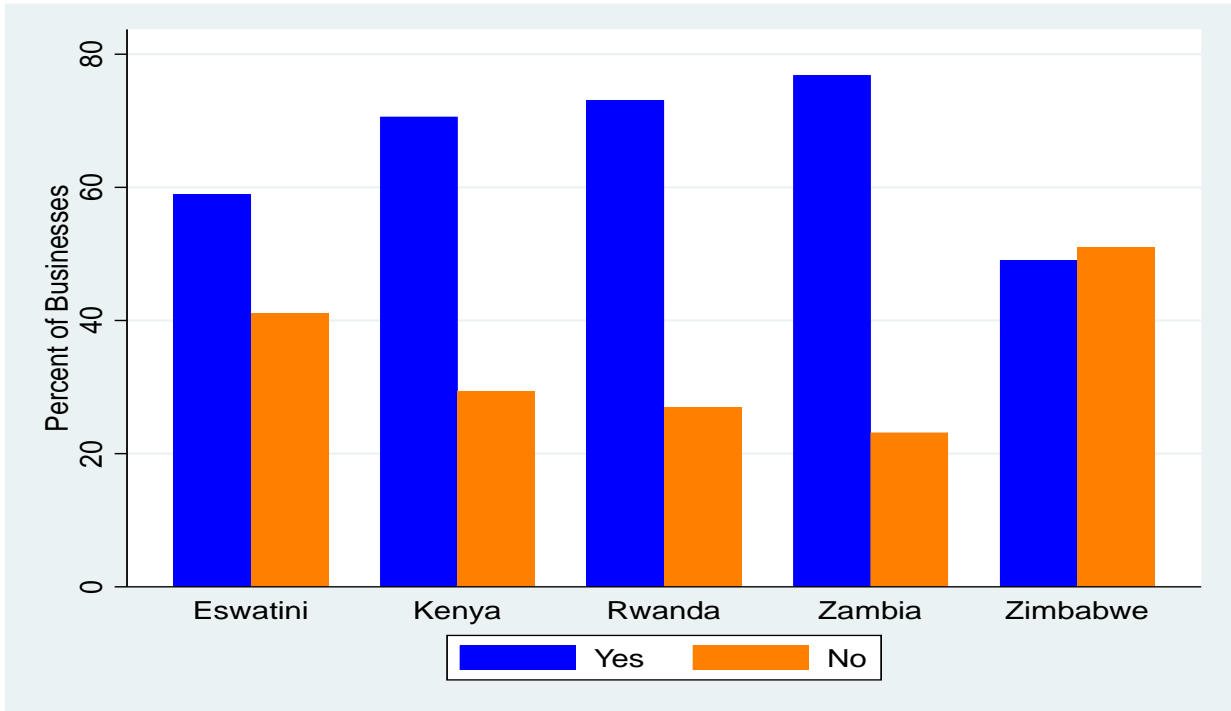
Figure 5.11 Access to Internet Banking by MSMEs in the five clusters of the study

Source: Primary Data (2022)

Notes to the figure: 'No' means that respondents do not use Internet banking
                       'Yes' means respondents use Internet banking
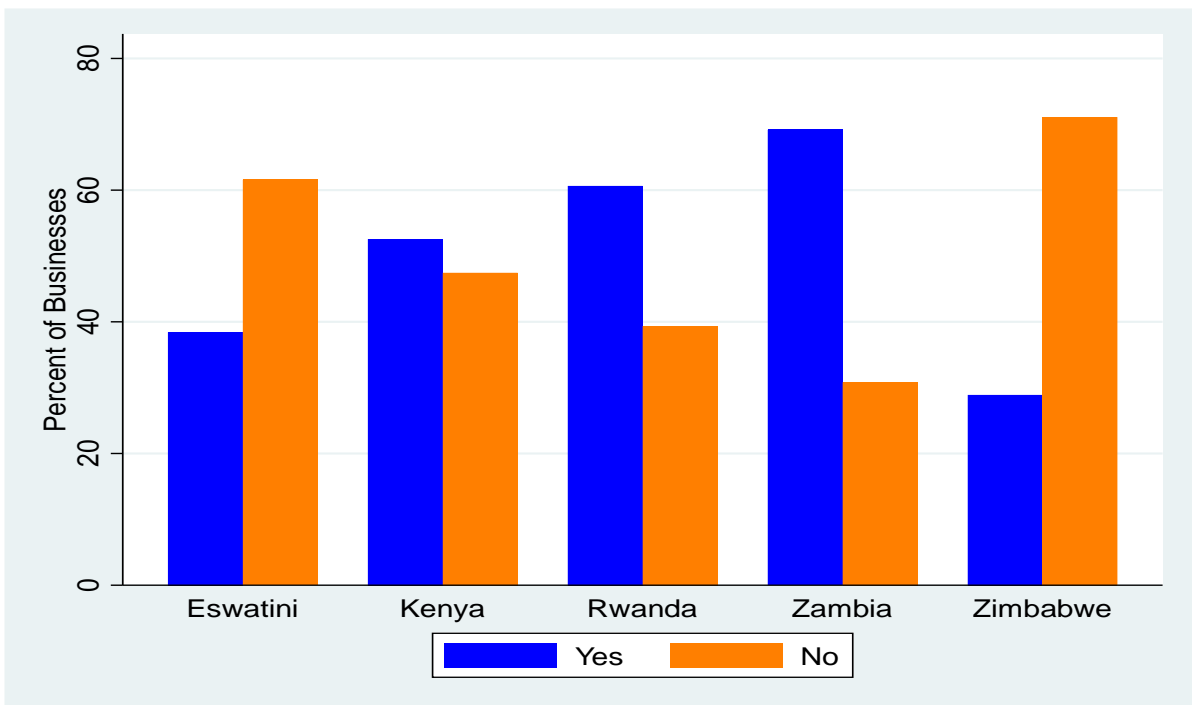
Figure 5.12 Proportion of businesses using digital programmes to manage finances

Source: Primary Data (2022)

Notes to the figure: *'No' means that respondents do not use digital programmes to manage finances.*
'Yes' means respondents use digital programmes to manage finances.

Figure 5.13 below shows financial products and services used by MSMEs in the COMESA region. The results show that money market accounts are very commonly used in the business activities of MSMEs in Rwanda, Kenya and Eswatini. On the other hand, wire transfers are reasonably used in Zambia and Zimbabwe. Safe deposit boxes are also a bit common in Zimbabwe and Eswatini. There is no significant adoption of traveler's checks, money orders, and foreign currency exchange by any of the countries.
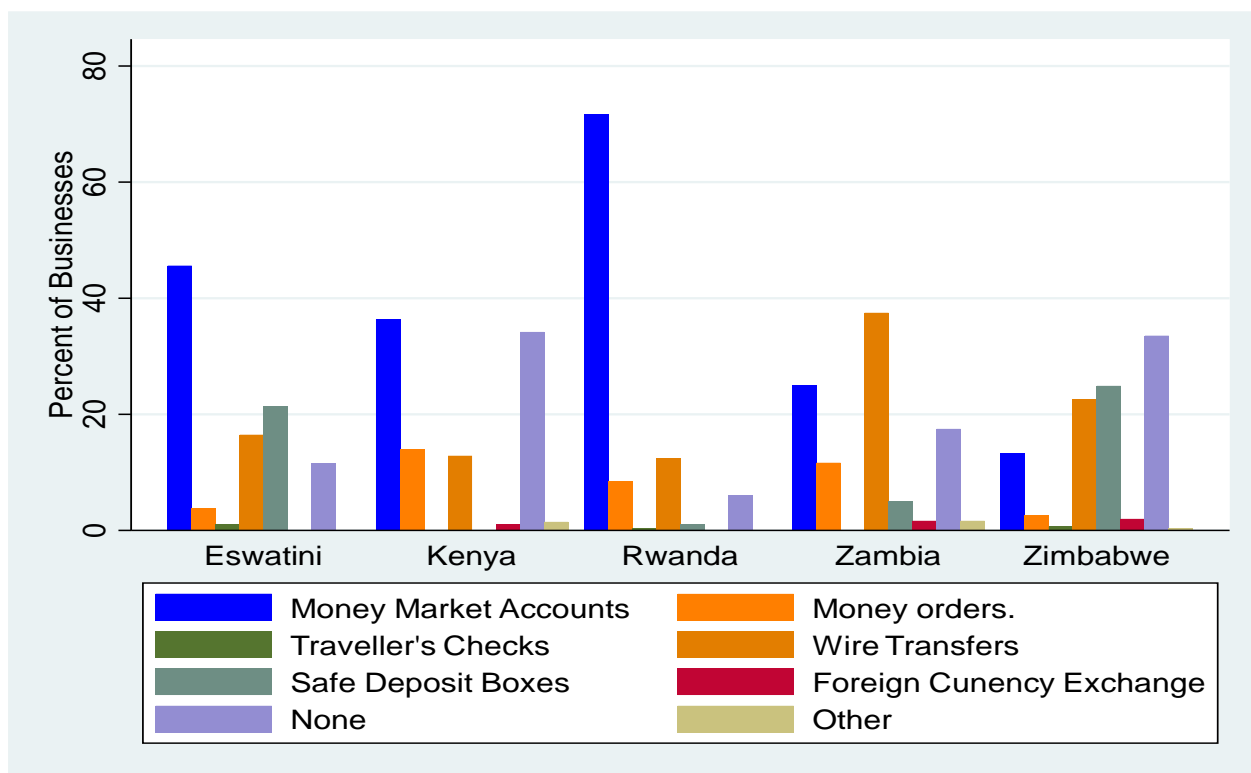
Figure 5.13 Financial Products and Services Used by MSMEs in the COMESA Region

Source: Primary Data (2022)

Figure 5.14 below presents mobile money applications and services used by MSMEs in the COMESA region. Mobile money transfer is the single dominant mobile money application and service across all MSMEs in the region. Mobile payments, mobile banking and other applications and services do not constitute any significant proportion.
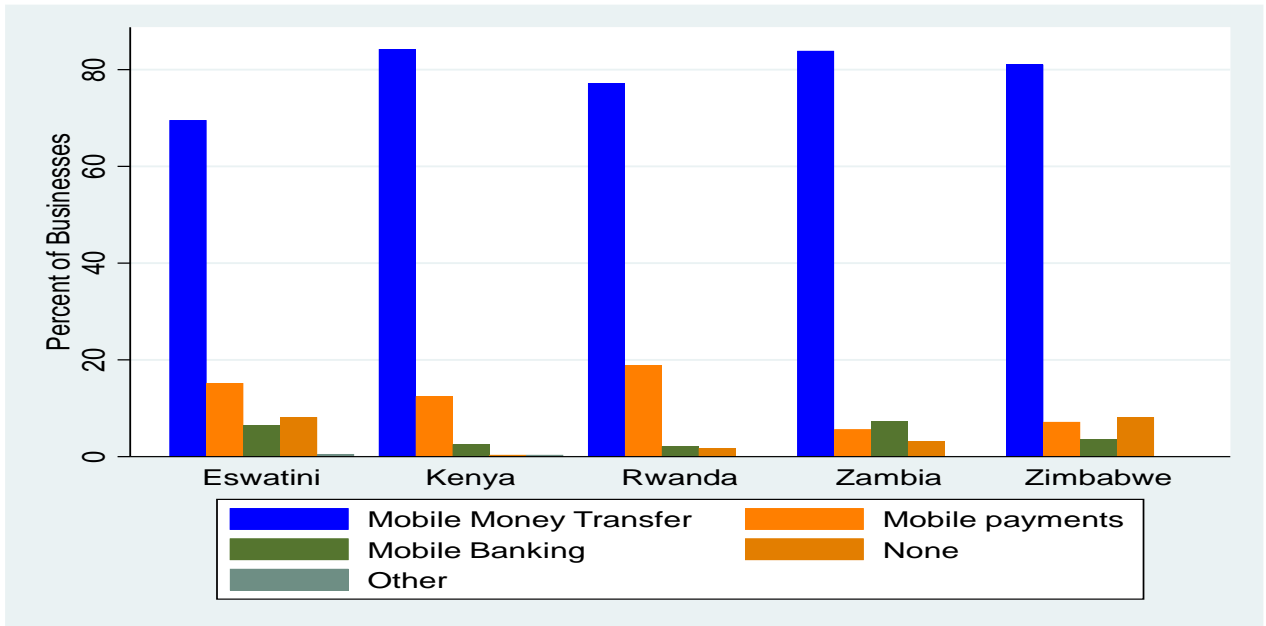
Figure 5. 14 Mobile Money Applications and Services Used by MSMEs in the Region

Source: Primary Data (2022)

The different kinds of financial loans accessible to MSMEs at different years of operating experience are presented in Figure 5.15. A significant proportion of the MSMEs appears to access none of the forms of funding at lower levels of operating experience, with the situation declining gradually as MSMEs gain more operating experience. On the other hand, home equity loans and personal loans are reasonably accessible to MSMEs even at less than 1 year of operating, then the use gradually grows and fluctuates as the MSMEs gain more years of operating experience. Mortgages and other types of loans are rarely accessible to MSMEs in the COMESA region.
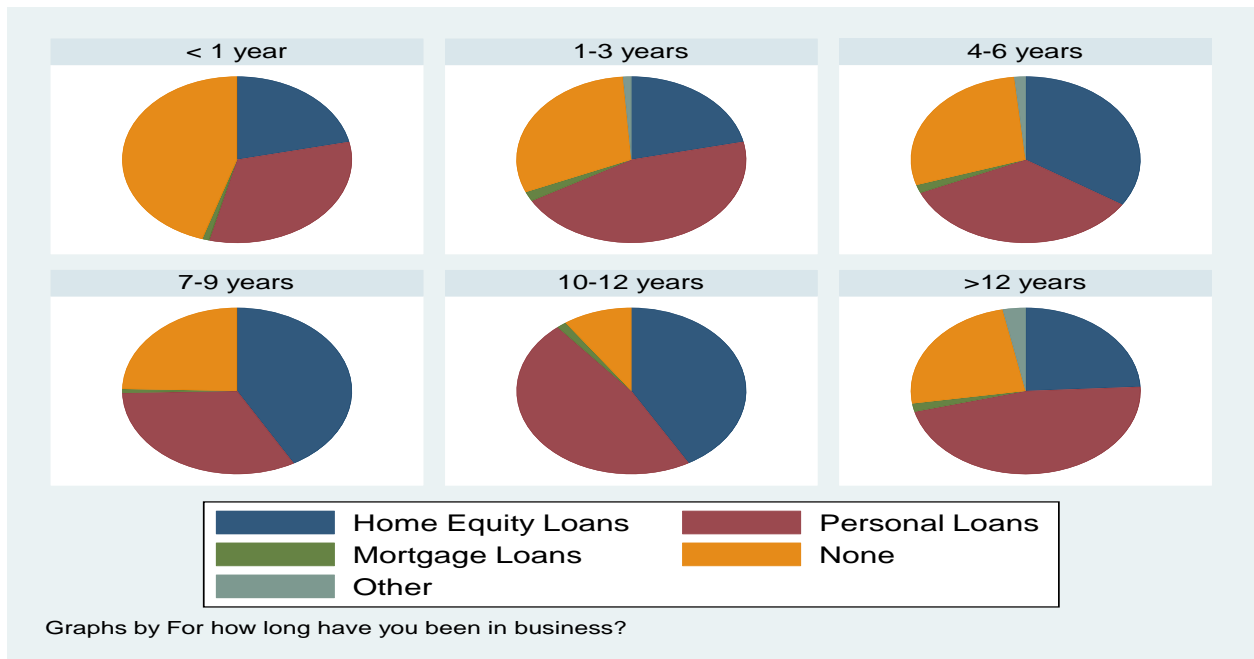
Figure 5.15 Type of Financial Loans Accessible to MSMEs at different Ages of Operation

Source: Primary Data (2022)

5.4 To Analyze the Factors Affecting the Adoption of E-business Amongst MSMEs of the COMESA Region

This section presents the results on the factors affecting e-business adoption by MSMEs in the COMESA region. To fully understand the driving and hindering factors to e-business adoption, we first explore the challenges firms are facing in using digital applications as this will be the building block for understanding the pull and push factors for e-business adoption. The second part of the section will detail the processes involved in computing different indices for the factors using Principal Component Analysis and finally present the regression results to determine the factors which affect e-business adoption among MSMEs. The last section will discuss the results and give conclusions on key determinants of e-adoption in the COMESA region.

5.4.1 Challenges Faced on Using E-business Applications Among MSMEs

The challenges were grouped into several sub-themes and parts and were named as factors. Thus, key challenges and perceptions of the respondents to the adoption of e-business were grouped according to these contextual factors for analysis. The challenges were grouped into six (6) groups according to these contextual factors for analysis as presented in Figure 5.16.
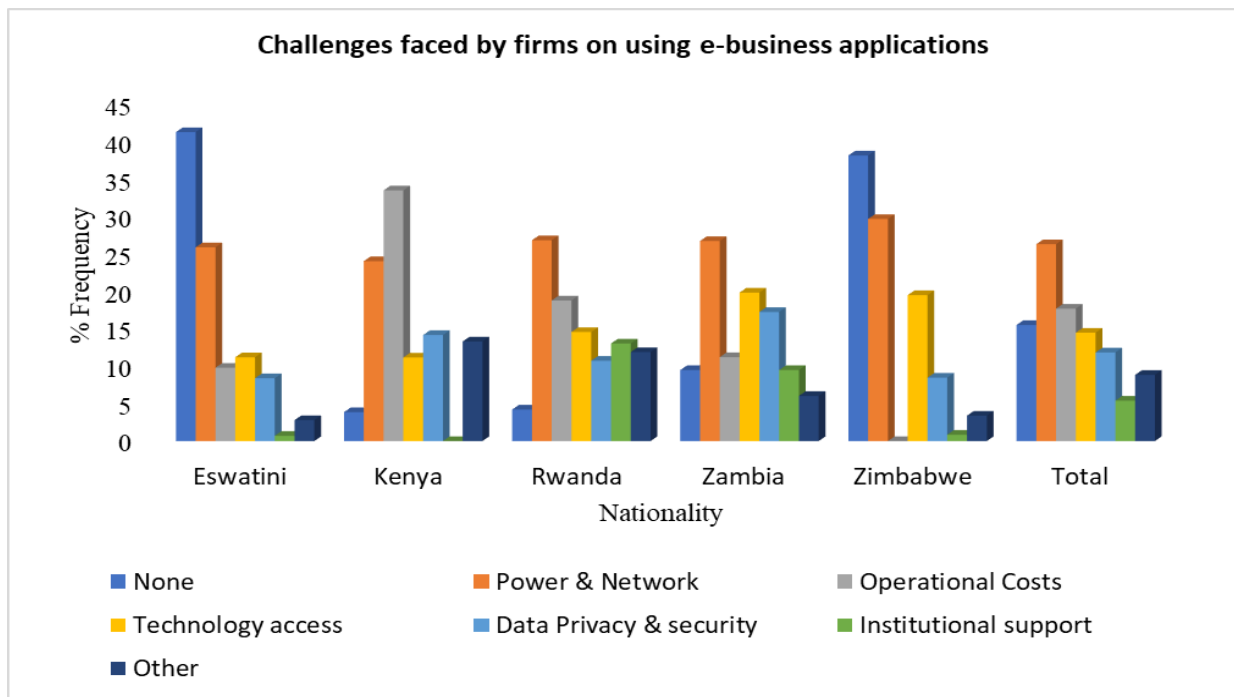
Figure 5.16 Challenges Faced by MSMEs by Nationality

Source: Primary Data (2022)

An exploration of the challenges through open-ended questions plays a key role in supporting the key contextual factors which support the use of e-business and digital financial inclusion among the COMESA countries. In Figure 5.1, all firms in the region reported that network connectivity and reliable supply of power constitute 26% of the challenges to the use of e-business applications. Overall, operational costs, technological challenges (network connection and power supply among others), and data security and privacy, are cited as other challenges with 18%, 14% and 12%, respectively. In addition to that, 33% of the firms in Kenya reported that technical and operational costs of using e-business applications are the key challenges. Institutional support had the lowest overall contribution, although in Rwanda, 13% of the firms have reported that lack of institutional support from the government, policies, and loan access as a hindrance to the use of e-business applications.

5.4.2 Adoption of e-business by MSMEs in the Region

To carry out the analysis on the factors affecting e-business adoption (*e-adoption*) is the dependent variable, which as per insights from Gibbs and Kraemer (2004) is proxied by the scope of e-business use by MSMEs for different activities in the value chain from advertising and procurement; marketing and sales; data exchange with customers and suppliers; and integration of business processes. Respondents were asked whether they used e-business platforms/ technologies in their operations. The use of e-business platforms is for these items: (1) advertising and marketing products; (2) online purchases; (3) online sales (4) delivering customer orders; (5) evaluating supplier offers; (6) improving efficiency; and (7) design electronic products, etc. Thus, the dependent variable *e-adoption* is dichotomous/discrete taking the values 0= Not adopt/not using e-business and 1= Adopt/using e-business.

The study investigates five (5) independent factors with one dependent factor of e-business adoption. The context factors include (1) Utility/perceived benefits factors; (2) Simplicity/ Compatibility factors; (3) Socio-cultural/environmental factors; (4) Human Intrinsic factors; and (5) Infrastructural factors. Content validity was established through careful selection of items based on comprehensive review of literature. Some questions were modified or dropped after examining their frequencies based on the pre-testing results. The indices were computed using the Principal Component Analysis (PCA) varimax rotation method.
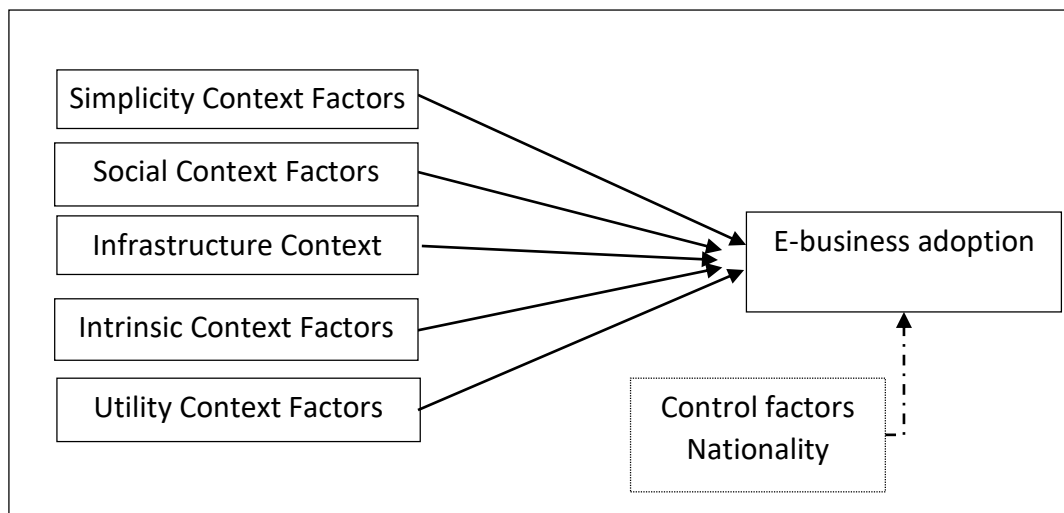
Figure 5.17 Contextual Factors Influencing E-business Adoption

Source: Adapted from Makudza, Sandada and Madzikanda (2022)

The indices were constructed for each factor using standardized z-scores to normalize the variables. At the initial stage, a set of 23 questions answered Utility context factors, five (5) questions on Simplicity context factors, six (6) questions on Social/environmental context factors, 13 questions on infrastructure context factors, and six (6) on individual intrinsic factors. The hypothesis tested in analyzing factors affecting digital business by MSMEs in the region are presented in Figure 5 by $H_1 - H_5$.

> H_1: *Utility context factors are positively associated with e-business adoption decisions.*

> H_2: *Simplicity context factors are positively associated with e-business adoption decisions.*

> H_3: *Social context factors are positively associated with e-business adoption decisions.*

> H_4: *Infrastructure context factors are positively associated with e-business adoption decisions.*

> H_5: *Intrinsic context factors are positively associated with e-business adoption decisions.*

The indices computed using PCA were tested for several tests including validity checks, multicollinearity and controlled for heteroscedasticity. Construct validity which refers to the degree to which items are free from random error was assessed by testing

resulting scales for reliability using Cronbach's Alpha Coefficient test. The Cronbach's alpha reliability coefficient ranges between 0 and 1, however, there is no lower limit to the coefficient. George and Mallery (2003) provided the rule of thumb that alpha should range between 0.6 and 0.9. However, they also noted that a high Cronbach's alpha coefficient (>0.9) indicates good internal consistency of the items in the scale. Through content validity, we neglect the factor analysis process to verify the tests of both convergent and discriminant validity through factor analysis.

The results shown in Table 5.2 show that MSMEs in the 5 countries had an average of four (4) years of operation using e-business. The variable *yrs_operation* which captured the number of years in business shows that the firms had an average of 4 to 6 years in business with a maximum of 12 or more years. The utility, simplicity, social, infrastructure and intrinsic indexed factors were falling in the range between -1 and 2. The standardized scale reliability coefficient from the Cronbach results showed that Simplicity, Social and Infrastructure had alpha values greater than 0.7. Utility and Intrinsic factors had higher alpha values for internal reliability suggesting that some items are redundant as they are testing the same questions but in a different guise.

Table 5. 2 Summary Statistics of the Variables of the Study

Variable	Obs	Mean	Std. Dev.	Min	Max	Cronbach alpha	Scale items
Independent Variable(s)							
E_BusinessTime	1,111	4.011	4.026	0	40	-	-
Years_Operation	1,192	2.861	1.264	1	6	-	-
Utility_factors	1,027	1.31e-09	1.000	-1.244	1.940	0.97	23
Simplicity_factors	1,107	-8.08e-11	1.000	-1.363	2.029	0.85	5
Social_factors	1,099	1.11e-09	1.000	-1.303	2.047	0.90	6
Infrastructural_factors	1,045	-1.34e-09	1.000	-1.296	2.166	0.89	13
Intrinsic_factors	1,120	1.76e-09	1.000	-1.292	2.036	0.93	6
Country dummies (0=no; 1=yes)							
dEswatini	1,212	0.177	0.382	0	1	-	-
dKenya	1,212	0.228	0.420	0	1	-	-
dRwanda	1,212	0.234	0.424	0	1	-	-
dZambia	1,212	0.103	0.304	0	1	-	-
dZimbabwe	1,212	0.257	.4374	0	1	-	-
Dependent Variable (0=not adopt; 1= adopted)						-	-
e_adoption	1,212	0.889	0.315	0	1	-	-

Source: Primary Data (2022)

The correlation results between the computed indexed e-business factors were positive with a maximum of 0.61 between simplicity factors and social factors. There are weak negative correlations between the e-business factors and the continuous time (e_businessTime) except for infrastructure context factors. The continuous variables years of operation and e-business time had a positive correlation above 0.5 threshold.

Table 5.3 Inter-items Correlation Matrix Results

	Utility	Simplicity	Social	Infrastructure	Intrinsic_	e_Business time	Years_Opertn
Utility	1						
Simplicity	0.58	1					
Social_	0.49	0.61	1				
Infrastructure	0.23	0.19	0.20	1			
Intrinsic_	0.61	0.51	0.49	0.20	1		
e_Business time	-0.10	-0.11	-0.10	0.03	-0.14	1	
Yrs_Operation	0.01	0.03	0.01	0.02	-0.06	0.56	1

Source: Primary Data (2022)

5.4.3 Regression Results

The estimated model was specified as;

$$L\left(e\_adoption_i\right)$$
$$= \beta_0 + \beta_1 Utility + \beta_3 Simplicity + \beta_4 Social + \beta_5 Infrastructure + \beta_6 Intrinsic + \beta_7 Yrs\_Operation + \beta_8 ebusinesstime + \beta_9 dCountry_{ij}$$

where $\beta_0, \beta_1, \dots, \beta_9$ are parameters to estimated.

The odds ratios $\frac{dy}{dx}$ results presented that the utility, and social context factors are positive as *a priori* expectations assumed although they are insignificant. On the other hand, Simplicity and Infrastructural context factors have negative signs which are insignificant as well. There is a negative and significant coefficient for Intrinsic factors meaning that as the individual's personal drive increases, the willingness to adopt digital technologies by MSMEs is more likely to increase. In addition to that, a highly positive and significant value for e-business time implies that as the years of using e-business platforms increases, the adoption of digital business platforms is more likely to increase. This is significant at 1% level of significance. The odds ratio for years of business operation imply a negative relationship between time in business and adoption of e-business. Thus, as the firm grows in years, their adoption of e-business platforms decreases. The dummy for Zimbabwe was dropped from the equation as the baseline country. The dummy for Kenya and Rwanda shows positive odd ratios

implying that firms in Kenya and Rwanda are more likely to adopt e-business compared to Zimbabwe. Odds ratios on dummies for Eswatini is negative and for Zambia positive but insignificant. Similar results have been confirmed from the linear probability model results also presented in Table 5.4.

Table 5.4 Logistic Regression Versus Linear Probability Model Results on E-adoption.

Logistic regression Results			Linear Probability Model Results	
Variable	dy/dx	Std. Err.	Coeff.	Std.Err
Utility	0.010	.009	0.008	0.012
Simplicity	-0.005	.009	-0.011	0.013
Social	0.001	.008	0.002	0.012
Infrastructure	-0.002	.007	-0.003	0.009
Intrinsic	-0.014*	.009	-0.020*	0.012
E_Businesstime	0.011***	.003	0.010***	0.003
Yrs_Operation	-0.02**	.005	-0.022***	0.008
dEswatini	0.016	.015	-	-
dKenya	0.033*	.017	0.016	0.040
dRwanda	0.032*	.018	0.016	0.039
dZambia	-0.015	.029	-0.044	0.043
dZimbabwe			-0.033	0.032
Constant			0.962***	0.037

(*) dy/dx is for discrete change of dummy variable from 0 to 1.

Source: Primary Data (2022)

The findings revealed a number of factors which have influenced and are still influencing the process of e-business adoption. The results mean that for the hypotheses, (H_1-H_4), there is no substantial evidence to reject the null hypothesis since the variables are insignificant from both the linear probability model and the logistic regression model. However, we reject the null hypothesis for H_5 and conclude that human intrinsic factors positively impact e-adoption by MSMEs in the COMESA region.

5.5 What is the extent of digital financial inclusion among MSMSEs of the COMESA region?

To test the hypothesis that e-business adoption significantly and positively impacts on digital financial inclusion among MSMEs of the COMESA region, we employed structural equation modelling techniques to produce unbiased estimates. It has been argued empirically that digital financial inclusion/access affect e-business adoption for MSMEs in developing countries. Similarly, it is possible that e-business adoption can also affect the level of digital financial inclusion by MSMEs leading to endogeneity bias/ problem.

5.5.1 Digital Financial Inclusion and E-business Adoption

On estimating the impact of e-business adoption on digital financial inclusion, we first tested for the significant differences between the adopters and non-adopters using the two-sample t-test. The results are presented in Table 5.5 below.

Table 5.5 Two sample t-test for equality of means in digital financial Inclusion between the adopters and non-adopters of e-business

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
no_adoption	79	.7272187	.0719922	.639881	.5838932	.8705443
e_adoption	1,067	-.0538428	.0306454	1.001031	-.113975	.0062894
Combined	1,146	1.29e-08	.0295399	1.000004	-.0579584	.0579585
Diff		.7810615	.1143423		.5567174	1.005406

diff = mean (non-adopters) – mean (adopters)   t = 6.8309
Ho: diff = 0   degrees of freedom = 1144
Ha: diff < 0   Ha: diff! = 0   Ha: diff > 0
Pr(T < t) = 1.000   Pr(|T| > |t|) = 0.000   Pr(T > t) = 0.000
Source: Primary Data (2022)

We find a very strong statistically significant difference in the means for the index for digital financial inclusion between the e-business adopter and non-adopter groups. Non-adopters have a significantly higher digital financial inclusion index (0.727) as compared to the adopters (-0.054) of e-business at 1% level of significance. The mean difference in digital financial inclusion is 0.781. While the expectation is that e-business adopters are better placed to present better digital financial inclusion outcomes, this data confirms the opposite. This shows that there are other factors driving digital financial inclusion beyond e-business adoption in COMESA region.

To understand the extent of digital financial inclusion among the MSMEs of the COMESA, a two-stage least squares regression on digital financial inclusion and e-business adoption in countries was done. From our equation 2.2 above, we regressed *adoption* on Age of the firm owner and the number of years using a computer as our independent variables.

$$e\_adoption_i = \alpha_0 + \alpha_1 Age + \alpha_2 Computer\_yrs$$

Age = A continuous variable measuring the age (in years) of the head of the firm/business

Computer_use= A continuous variable representing the number of years the firm owner has been using computers for digital business.

The estimated results given in the table below presents that the variables Age and years of computer use are highly significant at 1% level of significance. We predicted $e\_\widehat{adoption}$ from the model which is used as an independent in predicting equation 2.3.

Table 5. 6 Logistic Regression results on e_adoption

e_adoption	Coef.	Std. Err.	t	[95% Conf. Interval]	
Age	0.041	0.010	4.02***	0.021	0.061
Computer_use	0.100	0.018	5.41***	0.064	0.136
_cons	2.466	0.353	6.99***	1.774	3.157

*** *significance at 1% level*

Source: Primary Data (2022)

The results from the Linear Probability Model in Table 5.6 show that age positively and significantly increases the probability to adopt e-business tools. As the owner increases his age by a year, the likelihood to adopt e-business will increase by 4%, all things being constant. This high statistical significance in the first stage regression proves that age is a good instrument for e-adoption and therefore, we can conclude that age is endogenous.

To estimate whether e-business adoption significantly and positively impacts on digital financial inclusion among MSMEs, we simplified equation 2.3 as;

$$FinInclusion_{ij} = \beta_0 + \beta_1 \widehat{e\_adoption} + \beta_2 YrsOperation + \beta_3 eBusinessTime + B_4 dCountry$$

The digital financial inclusion *(FinInclusion)* variable was computed as an index from the Likert type questions on access and scope of use of Internet banking, ownership of a bank account, bank cards, and digital programme, mobile money transfers and access to financial loans by the firm. This was computed using the PCA varimax rotation.

Table 5.7 Regression Results on Digital Financial Inclusion and Adoption.

FinInclussion	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
adoptionH	-.1121139	.0620741	-1.81	0.071	-.2339451	.0097173
EBusiness_time	-.0455012	.0113158	-4.02	0.000	-.0677105	-.0232919
Yrs_Operation	-.0370226	.0341654	-1.08	0.279	-.1040782	.0300329
dEswatini	.3326155	.1348923	2.47	0.014	.0678661	.597365
dKenya	.3508451	.1191042	2.95	0.003	.1170825	.5846077
dRwanda	.082647	.1201269	0.69	0.492	-.1531228	.3184168
dZambia	0	(omitted)				
dZimbabwe	.6288205	.125196	5.02	0.000	.3831017	.8745394
_cons	.3778647	.256504	1.47	0.141	-.1255687	.881298

Source: Primary Data (2022)

The two-stage regression results showed that there is a negative association between e-adoption and digital financial inclusion in the COMESA region. The coefficient of -0.11 reports that conflicting results, meaning that, as the firms increase their willingness to adopt e-business, digital financial inclusion will decrease by 11 percent.

Our alternative hypothesis stated e-business adoption insignificantly and positively impacts on digital financial inclusion at 5% level. Therefore, there is not enough evidence to the null hypothesis. At 10 level of significance, we can conclude that in COMESA region, as firms increase the adoption of e-business, their access to/ use of financial services will decrease which contradict our theoretical expectations.

6. Discussions

6.1 To Examine the Dynamic Trend of E-Business Adoption among MSMEs of the COMESA Region

The dynamic trend of e-business adoption among MSMEs of the COMESA region showed a positive trend towards the adoption of e-business tools/platforms and technologies. This has been shown by the increasing number of firms who are using e-platforms, number of gadgets used, and uses of e-business platforms among countries. These results pose enough evidence to conclude that there is commendable progress to e-business adoption by MSMEs in the region. This increased usage of IT in the region may be due to the advantages which are attached to e-business as postulated by Kienen (2019) who unveils that e-business brought about seamless linkages between suppliers and local firms. This in turn removed traditional barriers between suppliers and their customers as business could be done in a more transparent manner. The increasing quality of broadband and ICT among the targeted countries has been on a rising trajectory which is impacting on the participation of MSMEs in e-business. Although literature portrays that developing countries have been slow in fitting into the global digital market (Laudon and Laudon, 2010; Khera et al., 2021; Agbatogun, 2018; Vale, et al., 2021), the results are showing commendable progress as the uses of digital platforms are increasing, especially in marketing and money exchange businesses and access to/use of Internet banking services. However, the study could not predict the margin of change or the rate of change of use/adoption of the e-business technologies in a specified period due to data limitations.

6.2 To Analyze the Factors Affecting the Adoption of E-Business Amongst MSMSEs of the COMESA Region

The results from our analysis showed that the key determinants of e-commerce adoption in the COMESA region are not fully explained by the theoretical factors of technology adoption. There is not enough evidence that those variables present more value to MSMEs (utility). Likewise, there is no evidence that social support factors increase the likelihood to adopt e-businesses. Likewise, there is also not enough evidence to conclude that infrastructural and simplicity factors positively impact the likelihood to adopt e-business. It is clear from the literature that as one's intrinsic skills improves, there is an associated improvement in their use of e-business tools, but in our case, the results revealed otherwise.

Our results, therefore, contradict studies that have been done on similar studies on e-business adoption. These studies highlighted that lack of skills, security, cultural and political barriers as factors affecting e-business adoption (Kapurubandara and Lawson, 2016). Poor infrastructure, lack of motivation by management, lack of online

policies and lack of power to influence partners were also pointed out to be some of the main reasons why adoption was very poor in Indonesia, based on the study conducted by Janita and Chong (2013). The most significant factor which affect adoption of e-businesses in the region are years of operation in the industry and the number of years of using the digital platforms. There is also enough evidence that firms in Kenya and Rwanda are adopting and using e-business technologies as compared to firms in Zimbabwe, as the results predicted. This may be because of their increasing growth rates (real GDP) which is better than Zimbabwe over the past decades. The two countries are also investing substantially in ICT and promoting MSMEs in their countries to facilitate the use and adoption of digital technologies as compared to Zimbabwe. Therefore, country level differences are a determining factor in the adoption of e-business platforms and technologies.

Although the determinants of e-business adoption may be differing from other studies, they can be supported by the fact that e-business adoption in developing countries is slow due to many challenges like connection costs, bandwidth and broadband availability, and security concerns. Prior researchers concur that the main issues of infrastructure, sound government policies, and resources have to be addressed in order to see the adoption of electronic business (Surry, et al. 2015; Lyons and Kass-Hanna, 2021).

6.3 To Examine the Impact of E-Business Adoption on Digital Financial Inclusion among MSMEs of the COMESA Region

Although the results from the 2 Stage Least squares method show a negative relationship between e-business adoption and digital financial inclusion, there is not enough evidence to support the result. In literature, it is known that as businesses increase the use and adoption of digital platforms and tools, there is a high likelihood that their access to and use of financial services will increase. Extant literature supported a positive relationship on these variables. A study conducted on 52 developing countries using a cross-sectional instrument variable procedure, established that digital financial inclusion positively influences economic growth as well as e-business adoption (Khera et al., 2021). In fact, digital financial inclusion should be extended to the disadvantaged segments of the society. Bokkens, (2021) found out that incorporating the secluded society will lead to greater financial empowerment of the marginalized population. Subsequently, this will bring about greater economic growth, diminished poverty and reduced socio-economic inequality, and therefore the achievement of these relevant SDGs.

7. Conclusions and Recommendations

Even though the trend of e-business adoption across the COMESA region continues to progress positively, its realization in creating demand for digital financial products and services for microenterprises and those at the base of the economy is not great. The determinants of e-business adoption predicted in this model are weak to justify that theoretical variables from the technology adoption theories explain the situation in developing countries. The results showed that intrinsic factors are a deterrent to e-business adoption. Variables like years in business, years of using e-business

platforms, and country-based differences have an impact on the decisions to adopt e-business.

However, there is an opportunity for policymakers and regulators to create an enabling environment for innovative e-business solutions which promote access and use of digital financial services among the poor and in e-business markets - and by extension lead to significant gains for digital financial inclusion. E-business models which target the needs of micro, medium and small enterprises could provide compelling reasons and opportunities to use digital wallets and payment mechanisms, and by extension, introduce new digital financial inclusion opportunities by enabling the poor to access other digitally enabled services appropriate for their needs, such as credit, savings, insurance or pensions.

Recommendation 1. Support the establishment and development of e-business models which align with the needs of MSMEs at the base of the economy by:

- Improving connectivity and extending physical digital communication infrastructure beyond urban centres into rural and remote areas. Government can lead in building this infrastructure, with private sector partners to enhance sustainability.
- Ensuring that adequate regulations for e-business are put in place (or as an extension of trade practices legislation) which specifically recognise the needs of the poor and offer appropriate protections, including redress or penalties for fraud.
- Encouraging local government in rural areas to facilitate and coordinate the growth of e-business, including development of key infrastructure (e.g. Internet connectivity, logistics networks etc.), concessions and reduced administration.
- Leveraging existing public and private infrastructure in regional and remote areas, such as bank branches, post office branches, consumer service centres, market trader stores, and cooperatives, to facilitate e-business transactions and logistics.
- Prioritising development of or access to sources of finance to support e-business platforms or models designed to reach poor and rural populations and assist micro-entrepreneurs in reaching economies of scale.
- Establishing programmes to promote consumer protections which cover the poor, including financial and digital literacy.
- Developing economy-wide e-commerce strategies to close gaps in digital access, adoption and use, including measures to enhance affordability and increase online safety, as well as targets for extending networks and digital access to rural and remote areas.
- Commissioning an update of the 2017 APEC Internet and Digital Economy Roadmap, specifically focusing on point 10, "Enhancing inclusiveness of Internet and Digital Economy," to include consumers and microenterprises operating in poor and vulnerable communities.

Recommendation 2. Support the transition from cash towards digital mechanisms for e-business platforms by:

- Working with the private sector to explore and develop opportunities to support the digitisation of microenterprise value chains.

- Raising awareness of the risks of fraud and developing mitigation strategies for microenterprises, especially for the poor and most vulnerable, to build confidence in the digital financial system.

Recommendation 3. Drive demand and support the on boarding of micro-merchants into formal e-business platforms by:

- Studying the various types of e-business used locally, including formal and informal models to better understand how it contributes to the economy, livelihoods, digital financial inclusion, and gender equality.
- Working with e-business market players to promote technology solutions which cater to the poor and enable online business opportunities, through technology incubators and accelerators, training, and development of start-up tools.
- Establishing pragmatic regulatory requirements to provide suitable pathways, including appropriate incentives (e.g., simple registration, lower tax thresholds), for micro-entrepreneurs engaged in e-business to formalise their businesses.
- Working towards creating a trustworthy environment for e-business, including the establishment of a framework for complaints and dispute resolution to discourage fraud, support better customer service and improve online sales.

8. References

Abdullahi, S. (2020). An Investigation into the Level of Financial Inclusion among Regional Blocs in Africa (Doctoral dissertation, Dublin, National College of Ireland).

Adegbite, O. O., & Machethe, C. L. (2020). Bridging the financial inclusion gender gap in smallholder agriculture in Nigeria: An untapped potential for sustainable development. *World Development*, *127*, 1–36. https://doi.org/10.1016/j.worlddev.2019.104755

Aetrade. (2021). Home | AeTrade Group. https://www.aetradegroup.com/

African Development Bank. (2011). The middle of the pyramid.Dynamics of the middle class in Africa. Addis Ababa: African Development Bank.

Agyekum, F., Locke, S., & Hewa-Wellalage, N. (2016). Financial inclusion and digital financial services: Empirical evidence from Ghana. *Munich Personal RePEc Archive*, *82885*, 1–20.

Ahmed, S., & Chinembiri, T. (2021). *Navigating COVID-19: Africa Women and Digital Financial Access in South Africa and Nigeria. July*, 1–10.

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In Action-control: From cognition to behavior. Edited by J. Kuhl and J. Beckman, 11–39. Heidelberg, Germany: Springer.

Ajzen, I. (1991). The theory of planned behavior. Organizational Behavior and Human Decision Processes 50.2: 179–211.

Ali, A. E. E. S. (2017). The challenges facing poverty alleviation and financial inclusion in North-East Kenya Province (NEKP). International Journal of Social Economics, 44(12), 2208-2223.

Andreki, H., & Yazdanifard, R. (2014). Is E-marketing the future of the marketing field. American Journal of Industrial and Business Management, 4, 333-336.

Asian Development Bank. (2020). Accelerating financial inclusion in South-East Asia with digital finance. *Journal Asean Development Bank*, pp.1-86.

ATkeaney. (2015). African retail development index.Still the next big thing. Retrieved August 08, 2018, from https://www.atkearney.com/documents/10192/6437503/Retail+in+Africa.pdf/b 038891c-0e81-4379-89bb-b69fb9077425.

Ayadi, R., & Shaban, M. (2020). DIGITAL FINANCIAL INCLUSION : A PILLAR OF RESILIENCE AMIDST COVID-19 Rym Ayadi and Mais Shaban. *EMEA Policy Paper*, 1–16.

Baker, L. (2021). Everyday experiences of digital financial inclusion in India's 'micro-entrepreneur' paratransit services. *Environment and Planning A*, *53*(7), 1810–1827. https://doi.org/10.1177/0308518X211026320

Bede Uzoma, A., Omankhanlen, A. E., Obindah, G., Arewa, A., & Okoye, L. U. (2020). Digital finance as a mechanism for extending the boundaries of financial inclusion in sub-Saharan Africa: A general methods of moments approach. *Cogent Arts and Humanities*, *7*(1). https://doi.org/10.1080/23311983.2020.1788293

Bokkens, A. (2021). *Financial inclusion and digitalisation : a qualitative research into organisational solutions for financial and digital literacy*. University of Twente.

Bongomin, G. O. C., Woldie, A., & Wakibi, A. (2020). Microfinance accessibility, social cohesion and survival of women MSMEs in post-war communities in sub-Saharan Africa: Lessons from Northern Uganda. *Journal of Small Business and*

Enterprise Development, *27*(5), 749–774. https://doi.org/10.1108/JSBED-12-2018-0383

Brzozowska, A. (2015). E-business as a new trend in the economy. *Procedia - Procedia Computer Science*, *65*(Iccmit), 1095–1104. https://doi.org/10.1016/j.procs.2015.09.043

Chaffey, D., & Smith, P. (2013). *E-marketing excellence planning and optimizing your digital marketing* (4th ed.). New York: Routledge.

Chaffey. (2011). E-marketing. London: Pearson.Financial Times Prentice Hall.

Chaitevzi, C. (2021). Common Market for Eastern and Southern Africa Adoption of ICT is Critical in Post COVID-19 Trade Facilitation Programmes in COMESA Region Picture Credit Legit.ng Team Leader-Trade Facilitation Programme EDF-11 Trade and Customs Division COMESA Secretariat Special Report.

Chanthunya, C. L. (2017). The COMESA free trade area: concept, challenges, and opportunities. In The free trade area of the common market for eastern and southern Africa (pp. 13-29). Routledge.

Chatzoglou, P., & Chatzoudes, D. (2016). *Factors affecting e-business adoption in SMEs : an empirical research*. *29*(3), 327–358. https://doi.org/10.1108/JEIM-03-2014-0033

COMESA Business Council (2021) -The Business Case for a Regional Digital Payments Policy for Micro, Small and Medium sized Enterprises (MSMEs) in COMESA - A Digital Financial Inclusion Plan for MSMEs, Lusaka, Zambia.

COMESA. (2021). https://comstat.comesa.int/search?query=digital%20transformation. Retrieved September 16, 2021

Common Market for Eastern and Southern Africa (COMESA). (2021). Sokokuu online trading platform launched – Common Market for Eastern and Southern Africa (COMESA). https://www.comesa.int/sokokuu-etrade-platform-launched/

Dann, S., & Dann, S. (2011). E-marketing (1st ed.). England: Pelgrave Macmillan.

Datt, R., & Mandeep, E. (2010). Impact of electronic marketing in globilising world.Indian perspective. Singapore: International Association of Computer science and information technology-Spring conference.

David-West, O. (2016). The path to digital financial inclusion in Nigeria: Experiences of Firstmonie. *Journal of Payments Strategy & Systems*, *9*(4), 256–273.

Deloltte. (2014). The deloite consumer review.Africa.A 21st century review. London: Deloitte LLP.

Ekwekwe, N. (2015). The challenges facing e-commerce startups in Africa. New York: Harvard review institute. Retrieved August 28, 2018, from https://hbr.org/2015/03/the-challenges-facing-e-commerce-start-ups-in-africa

Evans, O. (2018). Connecting the poor: the Internet, mobile phones and financial inclusion in Africa. *Digital Policy, Regulation and Governance*, *20*(6), 568–581. https://doi.org/10.1108/DPRG-04-2018-0018

Hagger, M. S. (2019). The reasoned action approach and the theories of reasoned action and planned behavior. In D. S. Dunn (Ed.), Oxford Bibliographies in Psychology. New York, NY: Oxford University Press. doi: 10.1093/OBO/9780199828340- 0240

Hasanat, M. W., Hoque, A., Shikha, F. A., & Anwar, M. (2020). *The Impact of Coronavirus (COVID-19) on E-Business in*. *3*(1), 85–90.

Idun, A. A. A. (2021). Does Finance Lead to Economic Growth Convergence in Africa? The Journal of Developing Areas, 55(3), 23-55

Ilin, V., Ivetić, J., & Simić, D. (2017). Understanding the determinants of e-business adoption in ERP-enabled firms and non-ERP-enabled firms: A case study of the Western Balkan Peninsula. *Technological Forecasting and Social Change*, 125, 206-223.

Ina Ibor, B., Offiong, A. I., & Mendie, E. S. (2017). Financial Inclusion and Performance of Micro, Small and Medium Scale Enterprises in Nigeria. *International Journal of Research -GRANTHAALAYAH*, *5*(3), 104–122. https://doi.org/10.29121/granthaalayah.v5.i3.2017.1758

Jenik, I., Timothy, L., & Nava, A. (2017). Crowdfunding and Financial Inclusion. *Cgap (Working Paper)*, *March*, 1–48.

Khera, P., Ng, S., Ogawa, S., & Sahay, R. (2021). *Is Digital Financial Inclusion Unlocking Growth ?* (WP/21/167 IMF).

Khomah, I., Rahayu, E. S., & Handayani, S. M. (2021). IOP Conference Series: Earth and Environmental Science Perception of e-business adoption in agribusiness MSMEs Perception of e-business adoption in agribusiness MSMEs. https://doi.org/10.1088/1755-1315/824/1/012119

Kurtz, D., & Boone, L. (2014). Contemporary marketing (17th ed.). Boston: Cengage Learning.

Lyons, A. C., & Kass-Hanna, J. (2021). Financial Inclusion, Financial Literacy and Economically Vulnerable Populations in the Middle East and North Africa. *Emerging Markets Finance and Trade*, *57*(9), 2699–2738. https://doi.org/10.1080/1540496X.2019.1598370

Machasio, I. N. (2020). *COVID-19 AND DIGITAL*. *1*, 1–7.

Mader, P. (2016). Card Crusaders, Cash Infidels and the Holy Grails of Digital Financial Inclusion. *A Journal on Civilisation*, *9*(2), 59–81. https://doi.org/10.6094/behemoth.2016.9.2.916

Maditinos, D., & Chatzoudes, D. (2014). Factors affecting e-business successful implementation. *International Journal of Commerce and Management*, *24*(4), 300–320. https://doi.org/10.1108/IJCoMA-07-2012-0043

Mahammed, O. (2015, 09 4). Quartz Africa.With a billion african to shop online. Retrieved August 23, 2017, from http://qz.com/478714/africas-emerging-consumer-classis-a-boon- for- the-continents'-online-retailers/

Makudza, F., Sandada, M., & Madzikanda, D. D. (2022). Modelling social commerce buying behaviour: an adaption of the sequential consumer decision making model. *Management Research and Practice, 14(*1), 17-29.

Mhlanga, D. (2020). Industry 4.0 in finance: the impact of artificial intelligence (ai) on digital financial inclusion. *International Journal of Financial Studies*, *8*(3), 1–14. https://doi.org/10.3390/ijfs8030045

Nasubo, F. E. (2021). Financial Institution and the Inclusion of Youths Through Entrepreneurship in Kenya. *Young African Leaders Journal of …, 3*.

Oliveira, T., Martins, M. F., & Lisboa, U. N. De. (2010). *Firms Patterns of e-Business Adoption : Evidence for the European Union-27*. *13*(1), 47–56.

Osakwe, S. (2020). *How Can Developing Countries Reduce Financial Exclusion? A Critical Review of Nigeria's Financial Inclusion Strategy*. *September*.

Parasuraman, A., & Colby, E. (2000). Technology readiness index.A multi-item to measure readiness to embrace new technologies. Journal for service research, 2(4), 307- 320.

Piñera, I. C. A. Y. (2021). *Financial inclusion: transforming Mozambique into a mobile money success-case* (Doctoral dissertation).

Rasyid, R., Masdupii, E., & Linda, M. R. (2020). *Financial Inclusion in Rural MSMEs: A SWOT Analysis*. *145*(Icebm 2019), 268–275. https://doi.org/10.2991/aebmr.k.200626.047

Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students* (5th ed.). London: Pearson Education Limited.

Seetanah, B., Sannassee, R. V., Fauzel, S., & Okwi, P. O. (2018). COMESA: A case study. Handbook of International Trade Agreements, 372-383.

Shams, R. (2013). Competitive advantage in market space.Implications of relationship marketing. In H. El- Hohary (Ed.), E-marketing in developed and developing countries.Emerging practices (pp. 32-46). Hershey: Business Science Reference.

Shipalana, P. (2019). Digitising financial services : A tool for financial inclusion in South Africa? *African Perspectives Global Insights*, *301*, 1–38.

Simon, W., & Suuk, M. (2021). Can Africa achieve universal Internet access by 2030? | Africa | DW | 05.11.2021. https://www.dw.com/en/can-africa-achieve-universal-Internet-access-by-2030/a-59729090

Southern African Development Community. (2021). Southern African Development Community: ICT & Telecommunications. https://www.sadc.int/themes/infrastructure/ict-telecommunications/

Statista. (2022). Internet penetration rate by region in Africa 2021 | Statista. https://www.statista.com/statistics/1176668/Internet-penetration-rate-in-africa-by-region/

Straus, A., & Frost, R. (2016). E-marketing. London: Routledge.

Tambunan, T. T. H. (2020). Evidence on the use of Internet for businesses by MSEs in a Developing Country. The Indonesian case. An Acad Bras Cienc, 92(1), 20180555. https://doi.org/10.1590/0001-3765202020180555

Umar, R., Hashfi, A., Zusryn, A. S., & Khoirunnisa, N. L. (2020). *ONLINE PAYMENT : INDIVIDUAL CHARACTERISTICS AND DIGITAL FINANCIAL INCLUSION IN OIC COUNTRIES. 6*(4), 767–788.

United Nations Development Programme{UNDP}. (2010). Development Challenges,South- South solutions. New York: United Nations Development Programme.

United Nations, (2021) The 17 Goals. Retrieved September 15, 2021, from https://sdgs.un.org/goals

Vasile, V., & Panait, M. (2021). Financial Inclusion Paradigm Shift in the Postpandemic Period . Digital-Divide and Gender Gap. *Int. J. Environ. Res. Public Health*, *18*, 1–28.

Yahia, Y. E., Liu, H., Sirag, A., & Shah, S. S. H. (2020). The Impacts of Intra-Trade on Industrialization: Evidence from COMESA. Asian Development Policy Review, 8(2), 75-101.

Zhong, X., Si, M., & Shanthini, A. (2021). E-business Transformation for Organizational Management and Its Impact in the Online Market. Journal of Multiple-Valued Logic & Soft Computing, 36.

9. Appendix: Questionnaire

⇒ **DEAR RESPONDENT,**

Thank you very much for your willingness to complete this questionnaire on *"The Digital Financial Inclusion of Micro, Small and Medium Enterprises (MSMEs) of the COMESA Region into Electronic Business (e-business) During and Post the COVID- 19 Pandemic"*. The study aims to develop and test a framework which augments digital financial inclusion through e-business usage among MSMEs in lagging segments of the COMESA region.

This is an anonymous and confidential survey. You cannot be identified, and the answers will be used for academic research purposes only. Your opinion is considered strictly confidential and only members of the research team will have access to the information. As the respondent, you are not obliged to complete the questionnaire and can withdraw at any time. Completion of the questionnaire also indicates your consent.

Digital Financial Inclusion means using cheap electronic technology to access banking, investing and insurance services by those people who have problems in obtaining these services at cheaper prices.

Please answer all the questions. There are no right or wrong answers. For any issues that relate to this study, kindly direct them to any of the following: forbes.makudza@staff.msuas.ac.zw;   masengu@mec.edu.om   or lucia.mandongwe@staff.msuas.ac.zw/

Thank you so much for your participation.

_____

Researcher

SECTION A: PARTICIPANT CHARACTERISTICS

INSTRUCTION: Please provide the required information by marking with an (X) in the appropriate space provided.

1. Kindly indicate your gender.
………………years

1	Male.	
2	Female.	

2.   Please   state   your   age

3.   Kindly   state   your
area/province/……………………

4. For how long you have been using e-business?............**Years**

5. Kindly indicate your nationality qualification

1	Eswatini.	
2	Kenya.	
3	Rwanda.	
4	Zambia.	
5	Zimbabwean.	
6	Other (*Please state*)……………………	

6. Please indicate your highest academic

1	High School.	
2	Certificate.	
3	Diploma.	
4	First Degree.	
5	Master's degree.	
6	PhD Degree.	
7	I do not have any	

7. For how long have you been in business?

1	Below 1 year.	
2	1 to 3 years.	
3	4 to 6 years.	
4	7 to 9 years.	
5	10 to 12 years.	
6	Above 12 years.	

8. Which e-business platforms does your business use? (Please tick all that apply).

1	Website.	
2	Mobile application.	
3	Social Media.	
4	Internet.	
5	Email	
6	I do not use any	
7	Other (*Please specify*)……………………..	

9. Which gadgets do you use to access you used?
e-business platform? (*Please tick all that apply*).
apply).

1	Non-smart phone.	
2	Smart phone.	
3	Phablet.	
4	Tablet.	
5	Computer.	
6	I do not have any	
7	Other (*Please specify*). ………………………	

10. Which e-business platforms have

(*Please tick all that apply*).

1	Doing business online with another company.	
2	Doing business online with customers.	
3	A final user of a product doing business with your company online.	
4	I do not use e-business platforms	

11. What do you usually use e-business platform for? *(Please tick ✔ all that apply)*

6	Looking for customers	

1	Looking for raw materials	
2	Searching for suppliers	
3	Evaluating suppliers offers.	
4	Designing electronic products	
5	Improving efficiency of your inhouse production.	

7	Delivering customer orders	
8	Marketing of your goods	
9	Handling customer issues	
10	Managing employees.	
11	Other *(Please specify)*.	
12	I do not use any	

12. What challenges do you face with e-business applications? *(Please state all challenges)*

1……………………………………………………………………………………………………
……2……………………………………………………………………………………………………
…………3……………………………………………………………………………………………………
………………
4……………………………………………………………………………………………………
……

DIGITAL FINANCIAL INCLUSION

---

a. Does your business use Internet banking?

1	Yes	
2	No	

bank account?

b. Does your business have a

1	Yes	
2	No	

c. Do you have a digital programme which manages using computer
your finances?(eg excel, pastel etc)

1	Yes	
2	No	

d. For how long have you been
programmes in managing
finances?............**years**

e. Which of the following financial products and services do you use. *(Please tick ✔ all that apply).*

1	Making bank deposits and get interests	
2	Prepaid cheque	
3	Traveller's cheque.	
4	Internet banking	

5	Banking using your mobile phone	
6	Foreign currency exchange	
7	I do not have any	
8	Other *(Please specify)*	

f. Which types of bank account do you have?
          g. Which of the following banking cards do you
(Please tick ✔ all that apply).   use? *(Please tick ✔ all that apply).*

1	Savings account	

2	Business Account	
3	Investment account	
5	We do not have any	
6	Other (*Please specify*) ……………………...	

1	Credit card	
2	Debit card	
3	ATM card	
4	Other (*Please specify*) ………………………	
5	I do not use any	

h. Which of the following mobile money application do you use? *(Please tick ✓ all that apply).*

i. What type of financial loans do you access? *(Please tick ✓ all that apply).*

1	Mobile money transfer	
2	Mobile payments	
3	Mobile banking	
4	I do not use any	
5	Other (*Please specify*) ……………………...	

1	Home Equity Loans	
2	Personal Loans	
3	Mortgage loan	
4	None of the above	
5	Other (*Please specify*) ……………………...	

SECTION B: DIGITAL FINANCIAL INCLUSION THROUGH E-BUSINESS USAGE AMONG MSMES OF THE COMESA REGION.

INSTRUCTION: With regards to your business operations, kindly respond truthfully to the following statements (by way of ticking ✓ in the right column), indicating truthfully your level of agreement or disagreement

	Digital financial inclusion through e-business usage among MSMEs of the COMESA region.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	Competition drives the need for e-business.					
2.	E-business enables us to accomplish specific tasks more quickly.					
3.	Using e-business in our organization would increase our productivity.					
4.	E-business, improves my chances of getting the best raw materials.					
5.	E-business enables us to meet customer demands.					
6.	E-business helps me to get value for money for my products.					
7.	Interactions on e-business platforms are effortless.					
8.	We can easily access formal credit facilities without challenges online.					
9.	E-business is simple to use for my internal business processes.					
10	I do not have problems discussing with suppliers online					
11	Selling to customers online is easy					
12	We are encouraged by the government to adopt e-business.					
13	Other industry players are motivating us to adopt e-business.					
14	My family supports the use of e-business in the company.					
15	Our top management regards e-business as a high priority.					
16	Our peers always support any e-business initiatives.					
17	My community, is supportive of the use of e-business.					
18	Internet data is affordable.					
19	The Internet speed is usually sufficient for e-business.					
20	We have access to Internet connection that allows us quick connection to e-business platforms.					
21	We have reliable power supply.					
22	My industry has e-business support services.					
23	My gadgets have software which is compatible with e-business					
24	I gain respect from my workmates through use of e-business.					
25	I have good knowledge of computer use.					

26	I have skills to share information on the Internet.					
27	I have abilities to compare offerings from different suppliers online.					
28	I have abilities to do business with customers online.					
29	I have personal ability in using e-business for processing internal records.					
30	We intent to look for suppliers using digital technologies					
31	We intent to purchase raw materials online					
32	We intent to manage our internal operations using e-business systems					
33	We intent to sell our products online					
34	We intent to market our business online					
35	We look for suppliers using digital technologies					
36	We purchase raw materials online					
37	We manage our internal operations using e-business systems					
38	We sell our products online					
39	We market our business online					
40	We intent to access digital financial services.					
41	We intent to access insurance services conveniently using e-business.					
42	Our business intents to make online payments					
43	We wish to have an operational digital system for financial management					
44	In the near future we want to start making and receiving payments using mobile phones					
45	We intent to do business transactions using Internet banking					
46	Very soon we will start transacting using POS terminals					
47	We already have access to digital financial services.					
48	We already have access to insurance services conveniently using e-business.					
49	Currently, we can make online payments					
50	We have an operational digital system for financial management					
51	As we speak, our business makes and receives payments using mobile phones					
52	We have been doing business transactions using Internet banking					
53	We have always been transacting using POS terminals					

THE END. THANK YOU VERY MUCH FOR YOUR TIME