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Investigating the adoption of Digital Financial Solutions and their impact on financial inclusion: A Sub-Saharan Africa Perspective

Thabo Maloka

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Research submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Management in the field of Digital Business

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ABSTRACT

This research examines the adoption of Digital Financial Solutions (DFS) and its impact on financial inclusion in Sub-Saharan Africa (SSA). Using an enhanced version of the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) framework, the study explores the intention to use and apply DFS across six countries: Kenya, Nigeria, Ghana, Uganda, Tanzania, and South Africa. It also addresses perceived risks, security concerns, infrastructure limitations, digital literacy, and regulatory hurdles.

A quantitative approach was adopted, utilising structured surveys from 586 valid respondents. The analysis included Exploratory Factor Analysis and Multiple Regression Analysis, which revealed that factors such as ease of use, social influence, perceived benefits, service quality, and trust are significant predictors of DFS adoption and utilisation. The study also highlighted variations among countries that reflect the influence of socioeconomic and infrastructural differences.

The findings underscore the crucial role of DFS in enhancing financial access, increasing usage frequency, and expanding the range of financial services available to previously excluded groups. This study offers theoretical insights and practical recommendations for policymakers, financial institutions, and technology providers aiming to foster financial inclusion through digital innovation in Sub-Saharan Africa.

KEYWORDS

Digital Financial Solutions, Financial Inclusion, Sub-Saharan Africa, UTAUT2 Framework

DECLARATION

I, Thabo Maloka, student number 747692, hereby declare that this master's thesis is my work except where indicated in the references and acknowledgements. The research was conducted at Wits Business School (WBS) under the supervision of Dr Chiedza Ndlovu. It is submitted in partial fulfilment of the requirements for the Master of Management in Digital Business degree at the University of the Witwatersrand, Johannesburg. This work is not a reproduction in part or whole of any research presented for the award of a degree.

Thabo Maloka,

TTV Maloka

_____

[Bryanston, Johannesburg, South Africa]
Signed on Sunday, 30 March 2025

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First and foremost, I give all glory and thanks to God Almighty. This journey has been anything but easy, and I know without a doubt that I would not have reached this point without His grace, strength, and constant presence. I owe Him every moment of clarity, breakthrough, and ounce of endurance.

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LIST OF ACRONYMS

4G: Fourth Generation

5G: Fifth Generation

DFS: Digital Financial Services

FinTech: Financial Technology

MF: International Monetary Fund

SSA: Sub-Saharan Africa

UTAUT: Unified Theory of Acceptance and Use of Technology

GDP: Gross Domestic Product

COVID-19: Coronavirus Disease 2019

GSMA: Global System for Mobile Communications Association

WAEMU: West African Economic and Monetary Union

SDGs: Sustainable Development Goals

SPSS: Statistical Package for the Social Sciences

TAM: Technology Acceptance Model

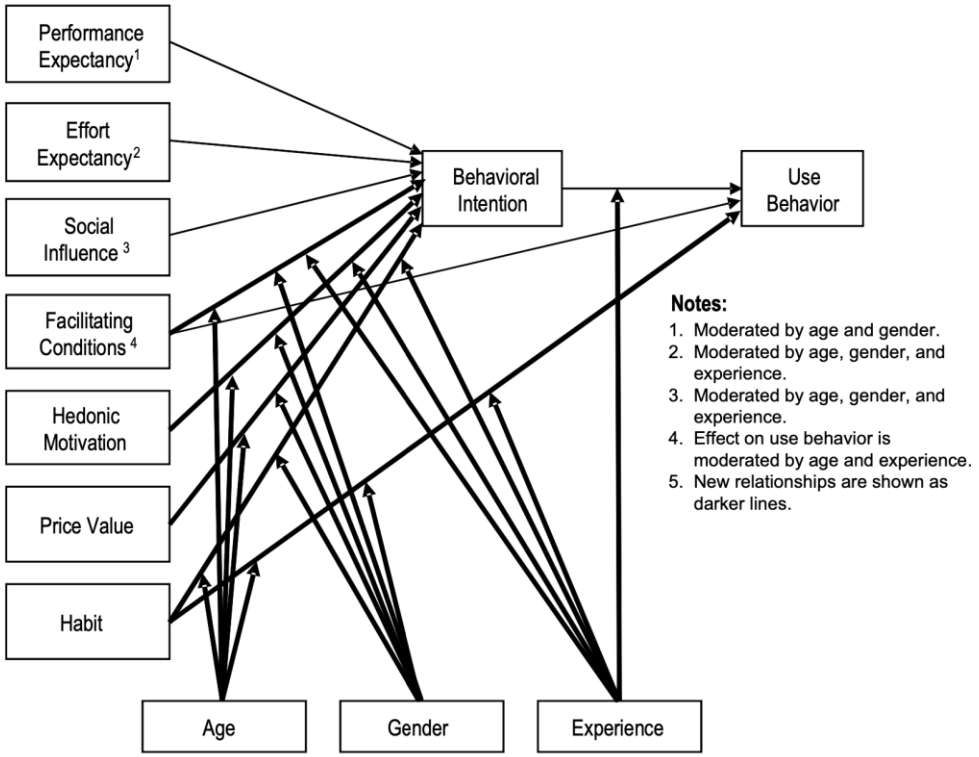
CHAPTER 1: INTRODUCTION

1.1. Statement of purpose

The fast growth of Digital Financial Solutions (DFS) could transform financial inclusion in developing regions like Sub-Saharan Africa (SSA), where access to financial services is a significant hurdle and there is excellent potential for both digital and financial inclusion. Despite advancements in the financial industry, many African people still need adequate access to banking services to participate fully in the economy and the financial system and, most importantly, contribute to regional economic growth. This paper investigates how using digital financial tools in Sub-Saharan Africa has influenced financial inclusivity in the region.

This study utilises the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) as its conceptual framework to investigate the factors impacting the uptake and utilisation of digital financial services in Sub-Saharan Africa (Venkatesh et al., 2012). Comprehending personal adoption and utilisation of IT is an established area of study in information systems. The original UTAUT model has been extended to UTAUT2 to capture consumer use context better. UTAUT2 introduces three additional constructs—hedonic motivation, price value, and habit—crucial for understanding technology adoption in consumer settings (Venkatesh et al., 2012).

Figure 1: UTAUT2 Framework



Adapted from V. Venkatesh, J. Y. L. Thong, and X. Xu, 2012.

1.2. Background of the study

Recent research in Kenya and Ghana has shown that mobile banking and other digital financial services can significantly improve financial inclusion (Ibourk et al., 2023; GSMA, 2023). An example is the M-Pesa platform in Kenya, which has transformed financial access, allowing millions to transact via mobile phones. This successful narrative showcases how DFS can break down traditional obstacles to financial services (Yengeni, 2020).

Despite significant progress in the financial industry, much of the population still requires financial inclusion. As the World Bank stated in 2022, around 45% of adults in Sub-Saharan Africa need access to formal financial services. This data highlights a significant obstacle that FinTechs have the potential to overcome by offering creative solutions to connect those who are financially excluded from traditional monetary systems.

By 2030, Sub-Saharan Africa is expected to reach about 700 million individual

mobile users, with Nigeria and Ethiopia making up roughly 30% of the total (GSMA, 2023). Moreover, the adoption of 4G is projected to increase significantly to 45% by 2028, while 5G is expected to bring $11 billion to the economy by 2030, focusing on urban and industrial sectors. In 2022, mobile technologies contributed 8.1% to SSA's GDP, amounting to $170 billion. By 2030, this contribution is estimated to soar to $210 billion. In 2022, the mobile industry helped create 3.5 million jobs, generating $20 billion in public funding through taxes. This support was both direct and indirect.

According to Kamara and Yu (2024), financial inclusion significantly contributes to achieving the Sustainable Development Goals (SDGs) and the African Union's Agenda 2063. It plays a crucial role in poverty alleviation, fosters sustainable economic growth, and substantially enhances individuals' overall quality of life, especially within Sub-Saharan Africa. This perspective aligns with prior evidence from Klapper et al. (2016), highlighting financial inclusion as a key driver of economic empowerment and inclusive development.

The increasing collaborations and innovations in FinTech enhance economic and digital inclusion, furthering mobile industry trends and financial inclusion in Sub-Saharan Africa. Collaborations, advancements, and the expansion of monetary offerings, especially in payments and micro-loans, highlight the vital contribution of DFS in improving financial access. Examples of mobile money growth, like the reported revenue increases from Airtel Africa and MTN's mobile money services, demonstrate the rising adoption and impact of DFS (GSMA, 2023).

The expansion of financial technologies in Sub-Saharan Africa is rising due to the widespread use of mobile phones and the growing access to Internet services. According to the GSMA (2023), there was a 13% rise in mobile money usage in Sub-Saharan Africa in 2023, showcasing a willingness of the population to adopt digital financial services. The increase in mobile money usage showcases the population's readiness to embrace new financial technologies that offer ease and availability. Mobile money services have become essential for financial inclusion in numerous African nations, providing various services, including money transfers, savings, and loans (GSMA, 2023).

Still, addressing challenges like digital literacy, trust in technology, and regulatory hurdles is necessary to maximise the impact of DFS. Many potential users need help with digital literacy, requiring additional skills to utilise digital financial services effectively. Improving digital literacy through education and training is crucial to ensure that FinTech solutions can be accessed by everyone in the population (Yengeni, 2020). Trust in technology is an essential issue, as users must become more conscious of the security and dependability of digital financial services. Establishing credibility via solid security measures and open practices is essential for promoting acceptance. Challenges from regulations can also hinder the expansion of FinTech, as complicated and sometimes strict rules can suppress creativity. Establishing a regulatory framework that harmonises innovation and consumer safeguarding is essential for the long-term growth of the FinTech industry in Sub-Saharan Africa (Cele & Mlitwa, 2024).

The significance of financial inclusion cannot be emphasised enough. It fosters economic expansion, diminishes poverty, and enhances social cohesion. Financially included individuals have improved chances to save, invest, and protect themselves from financial insecurity. This is especially important in Sub-Saharan Africa, where traditional banking services are frequently restricted, especially in rural areas. According to the GSMA (2023) report, digital financial services like mobile banking, online lending platforms, and digital payments are an accessible and cost-effective alternative to traditional banking, particularly for marginalised communities.

Sub-Saharan Africa offers a distinct setting for examining the influence of DFS on financial inclusion because of its wide-ranging socio-economic conditions, notable differences between urban and rural areas, and varying degrees of technological proficiency throughout the region. Unlike more developed areas like Europe, where financial services are widely available, Sub-Saharan Africa requires custom strategies to enhance financial inclusion.

While FinTech holds significant promise for enhancing financial inclusion in Sub-Saharan Africa, realising its full potential requires addressing various challenges.

By focusing on infrastructure development, regulatory support, and improving digital literacy and trust, policymakers, financial institutions, and technology developers can leverage FinTech to bridge the financial inclusion gap and drive economic development in the region. This study aims to provide empirical evidence on the role of Digital Financial Solutions in Sub-Saharan Africa, offering insights that can guide the formulation of effective strategies to promote financial inclusion (Bank, n.d.; Slazus & Bick, 2022)

1.3. Research problem

The financial sector has made significant strides in Digital Financial Solutions. However, many in certain Sub-Saharan African nations still need access to or underutilise banking services. This limited financial inclusion inhibits economic advancement and worsens social and economic disparities. Obstacles like lack of digital skills, uncertainty about technology, and regulatory barriers add to the complexity, making it difficult for DFS to be widely embraced and effectively utilised.

Kenya

Kenya has made significant progress in financial inclusion thanks to the success of mobile money services. Based on the World Bank's findings from 2022, about 17% of Kenyan adults still need bank accounts. The introduction of the M-Pesa platform has been revolutionary, as over 98% of households now possess a mobile money account (FSD Kenya, 2023). Nonetheless, a significant obstacle is digital literacy, especially in rural regions, where only 40% of the people possess sufficient digital skills (GSMA, 2023).

Nigeria

Nigeria needs to focus on enhancing financial accessibility. The Global Findex Database of 2021 shows that 36% of Nigerian adults still need a bank account. However, there has been an increase in the adoption of DFS, with 45% of adults using mobile money services (EFInA, 2023). Obstacles in regulations are a significant challenge for the growth of DFS, as intricate and rigid rules hamper creativity and progress (IMF, 2023).

Ghana

As the World Bank stated in 2022, around 42% of Ghana's adult population requires formal financial services. There has been a rise in mobile banking usage, with more than 60% of adults utilising these services (Ibourk et al., 2023). Confidence in the security of mobile money services is still a significant concern, with just 50% of users trusting in technology (GSMA, 2023).

Uganda

Uganda also requires assistance in financial inclusion, as around one-third of its adult population does not have access to banking services (World Bank, 2022). Still, mobile money services are widely used, with more than 65% of adults utilising them (Findex, 2021). Digital literacy remains a problem, particularly in rural regions where only 30% possess adequate digital skills (GSMA, 2023).

Tanzania

Nearly a third of Tanzanian adults need bank accounts (World Bank, 2022). According to the IMF's report from 2023, half of all adults have adopted mobile money services. The widespread use of DFS is limited by inadequate digital infrastructure in rural areas, as noted by the GSMA in 2023.

South Africa

Even though South Africa is more economically developed than most other Sub-Saharan countries, there is still a need for improvement in terms of financial inclusion. According to FinMark Trust (2022), around a quarter of adults in South Africa need bank accounts. The uptake of DFS has been less rapid than in nations such as Kenya, where just 45% of adults are using mobile banking services (BankservAfrica, 2023). Regulatory complexities and trust issues are also significant obstacles hindering the broader implementation of digital financial services in South Africa (World Bank, 2022).

1.4. Research objectives

This research, guided by the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2), aims to systematically explore the factors influencing the adoption and usage of DFS and their impact on financial inclusion. The specific research objectives are as follows:

Objective 1: ***Determine the factors influencing behavioural intention to adopt DFS in Sub-Saharan Africa.***

Identify the impact of performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, and price value on the behavioural intention to adopt DFS among different demographic groups in SSA.

Objective 2: ***Analyse the factors affecting the actual use behaviour of DFS.***

Examine how facilitating conditions, habits, and behavioural intention influence the actual use behaviour of DFS in SSA and assess how these factors contribute to sustained usage and integration into daily financial practices.

Objective 3: ***Evaluate the impact of DFS adoption on financial inclusion.***

Measure the extent to which the adoption and use of DFS enhance financial inclusion in SSA, focusing on improvements in access to financial services, usage frequency, and the range of financial products utilised by previously unbanked or underbanked populations.

Objective 4: ***Identify barriers to the adoption and use of DFS.***

Identify the key barriers to adopting and using DFS in SSA, such as perceived risks, security concerns, infrastructural challenges, lack of digital literacy, and the regulatory landscape, and propose strategies to overcome these barriers to enhance financial inclusion.

1.5. Rationale

Recent studies have concentrated on examining the level of financial inclusion in Sub-Saharan African nations and the growing importance of Digital Financial Solutions. Ibourk et al. (2023) emphasised the beneficial effects of mobile banking on increasing financial inclusion in Ghana, revealing the potential of DFS to improve access to financial services. Additionally, the GSMA (2023) report highlighted the barriers and opportunities that DFS poses, especially in tackling issues related to digital literacy and infrastructure. Moreover, the World Bank (2022) supplied thorough information on financial inclusion rates in different regions, while the Findex (2021) research offered an in-depth analysis of the usage of mobile money services in Uganda and Tanzania. Furthermore, EFInA (2023) investigated the increasing importance of DFS in Nigeria and the regulatory challenges that come with it, while the IMF (2023) studied the regulatory environment and how it affects the adoption of DFS in Nigeria and Tanzania. This research highlights how financial inclusion is changing and emphasises the critical role of DFS in shaping the future of financial services in Sub-Saharan Africa.

Understanding the factors that impact the adoption and usage of DFS in certain Sub-Saharan African countries is crucial because DFS can help bridge the financial inclusion gap. Due to the region's varied socio-economic environments, wide urban-rural gaps, and differing levels of technological literacy, a customised strategy is required to improve financial inclusion.

This study aims to gather empirical evidence on how Digital Financial Services can help advance financial inclusion in Sub-Saharan Africa. To achieve this, the research will build upon the UTAUT2 framework, considering obstacles such as perceived risks, security concerns, infrastructural challenges, digital literacy, and regulatory landscape. By integrating these barriers, the proposed theoretical framework offers a more comprehensive and context-specific understanding of the factors influencing DFS adoption and usage.

The research seeks to identify the main drivers and obstacles to DFS adoption to provide valuable insights for developing effective strategies to improve financial inclusion. The enhanced UTAUT2 framework forms a solid basis for analysing DFS adoption and its impact, ensuring that the study addresses the specific challenges encountered in Sub-Saharan Africa. The results of this study will be essential for policymakers, financial institutions, and technology developers in creating interventions that promote DFS adoption and economic inclusion.

1.6. Delimitations of the study

This research paper focuses on the adoption and impact of Digital Financial Solutions on financial inclusion in the abovementioned sub-Saharan African countries, specifically Kenya, Nigeria, Ghana, Uganda, Tanzania, and South Africa. The geographic focus of this research is confined to these countries, which were chosen based on their varying levels of DFS adoption and unique socio-economic landscapes. By concentrating on these nations, the study aims to capture a wide range of adoption levels and barriers to financial inclusion within a manageable scope.

Technologically, the study will focus on specific types of DFS, including mobile money, mobile banking, and online lending platforms. These technologies have been identified as the most impactful in enhancing financial inclusion within the chosen countries. By limiting the scope to these DFS types, the study can provide a more detailed and relevant analysis of their adoption and use.

The study utilises UTAUT2 as its conceptual framework for research. UTAUT2 was selected because it thoroughly comprehends consumer technology adoption, which is essential in examining DFS adoption. This structure will lead the exploration of the factors affecting DFS adoption and their influence on financial inclusion.

The population of interest for this study comprises adult individuals who are potential or actual users of DFS within the selected countries. This demographic is critical for understanding the barriers and drivers of DFS adoption. The study

aims to provide insights directly relevant to the primary target group for financial inclusion efforts by focusing on adults.

Specific exclusions are necessary to maintain the study's focus and manageability. Countries outside Sub-Saharan Africa or regions within Africa that are outside the selected countries will not be covered. This exclusion ensures that the study remains geographically concentrated and relevant. Additionally, traditional financial services that do not involve digital platforms will not be included, as the primary interest lies in understanding the role of digital technologies in financial inclusion.

CHAPTER 2: LITERATURE REVIEW AND THEORETICAL FRAMEWORK

1.7. Introduction

The literature review on the impact of FinTech and digital financial solutions on financial inclusion reveals that various authors have explored this topic from different perspectives using different theoretical and conceptual frameworks. For instance, Yengeni (2020) examined the role of FinTech in Africa and highlighted the transformative impact of mobile money on financial inclusion, especially in East Africa. FinTech services such as mobile money have notably increased accessibility, reduced transaction costs, and economically empowered previously excluded populations, reshaping traditional financial inclusion (Kamara & Yu, 2024; Gosavi, 2018; Suri & Jack, 2016).

Cele and Mlitwa (2024) investigated the effects of FinTech on regulation, incumbents, and consumers in South Africa, noting both the benefits and challenges of these innovations. Slazus and Bick (2022) focused on consumer behaviour towards branchless mobile banking in South Africa, emphasising perceived usefulness, ease of use, and trust as critical to adoption. Kilani et al. (2023) extended the UTAUT2 model to include trust, providing insights into consumer post-adoption behaviour towards e-wallets in Jordan; the trust element of Kilani et al. l (2023) will be adopted in this study. Furthermore, FakhrHosseini et al. (2022) reviewed technology adoption models, emphasising the importance of user, system, task-specific, and societal factors in adopting intelligent environments. Additionally, Ololade (2024) conducted a comparative analysis of FinTech initiatives in Africa and the U.S., highlighting the diverse applications of FinTech in promoting financial inclusion.

These studies collectively contribute to understanding how digital financial solutions enhance financial inclusion. However, there needs to be more literature. A comprehensive comparative analysis has yet to be conducted across multiple countries and industries within Sub-Saharan Africa to assess their overall impact on financial inclusion and economic performance.

In his article, Ololade (2024) compares the impact of FinTech innovations on financial inclusion in Africa and the U.S. He discusses how these innovations have increased access to financial services for unbanked populations, identifies barriers and opportunities, and suggests policy recommendations. However, the A study should investigate the variations in FinTech adoption across different countries and industries within Sub-Saharan Africa. Further research is needed to conduct a detailed cross-country and cross-industry analysis of the impact of digital financial solutions on financial inclusion in Sub-Saharan Africa.

1.8. Digital Financial Solutions in Sub-Sahara

1.8.1. Mobile Money

Mobile money is a regulated payment service that can be performed via any mobile device, allowing users to access their money anywhere and at any time without needing a formal bank account (Kulu & Bondzie, 2024). In her research, Yengeni (2020) discusses Africa's lack of access to banking services and the global efforts to improve financial inclusion to promote economic growth. Her work concludes that FinTech, particularly mobile money, significantly enhances financial inclusion in Africa. Cele and Mlitwa (2024) agree that digital financial solutions positively impact financial inclusion and the broader economy. They improve access to financial services for previously underserved populations, enhancing economic participation and alleviating poverty (Yengeni, 2020; Cele & Mlitwa, 2024).

Mobile money services have increased substantially in different areas, especially in Sub-Saharan Africa. By 2021, almost half (48%) of the 1.35 billion global mobile money accounts were in Sub-Saharan Africa. According to Seck-Sarr (2024), worldwide mobile money accounts will reach 1.6 billion by 2022, a double growth from 772 million in 2017.

In Ghana, mobile voice service subscribers increased from 25.6 million in 2012 to 40.01 million in 2018. In the same timeframe, mobile money users grew from

3.8 million to more than 32.6 million, with active users climbing from 345,434 to 13.1 million. In Ghana, 40.9 million mobile money accounts were registered by 2021, and 17.5 million were active. In 2022, the market was worth US$121.8 billion and is expected to hit US$590.7 billion by 2028, showing a growth rate of 29.6% (Seck-Sarr, 2024; Kulu & Bondzie, 2024).

Nigeria has experienced a significant rise in mobile money users as a result of advancements in FinTech. Over the last few years, the nation has drawn substantial investments totalling USD 600 million to grow mobile money services. It was estimated that by 2025, there would be 140 million smartphone users in Nigeria, leading to increased use of mobile money (Seck-Sarr, 2024).

The WAEMU zone has been a central area for implementing mobile money projects. In 2021, there were 40 initiatives for issuing mobile money in the area, with Electronic Money Issuers (EMIs) owning 60% of all accounts. The spread of COVID-19 sped up the acceptance of mobile money services in the continent, evolving from substitutes for cash to full-fledged banking options (Seck-Sarr, 2024).

1.8.2. Significant barriers to mobile money adoption

Despite the accelerated adoption noted above, some barriers exist to realising the full potential of financial inclusion and economic growth.

- Technological and infrastructure challenges: Limited internet penetration and inconsistent network coverage are significant barriers. These issues are especially pronounced in regions like WAEMU, where more policies are needed to increase awareness and adoption of mobile money. In contrast, countries in East Africa, such as Kenya, have higher adoption rates due to better infrastructure and supportive policies (Coulibaly, 2021; Osabutey & Jackson, 2024)
- Socio-economic barriers: High transaction fees and general mistrust of mobile money services deter many potential users, particularly traders. Regulatory oversight is needed to ensure fair pricing and quality service (Osabutey & Jackson, 2024). Lower education and financial literacy levels also impact

adoption, with many people mistrusting the technology or needing to understand its benefits (Osabutey & Jackson, 2024). Concerns over privacy and security further inhibit widespread use (Osabutey & Jackson, 2024).

- Regulatory and policy challenges: Concerns about information disclosure to the government and potential surveillance deter users. Vital privacy education and enforcement of laws are necessary to build trust (Osabutey & Jackson, 2024). Identity theft and cybercrime risks challenge financial inclusion, highlighting the need for improved cybersecurity education (Osabutey & Jackson, 2024). Effective regulatory oversight is essential to manage high charges and service quality (Osabutey & Jackson, 2024).
- Local economic conditions: Economic disparities affect adoption rates, with poorer regions experiencing slower growth (Osabutey & Jackson, 2024). Supportive innovation ecosystems, like those in Kenya, facilitate faster adoption than areas with less policy support, such as WAEMU (Osabutey & Jackson, 2024).

These barriers underscore the need for collaborative efforts from policymakers, service providers, and international stakeholders to enhance mobile money adoption and its impact on financial inclusion and economic development.

1.8.3. Online Payment Solutions

Online payment solutions refer to various electronic methods for conducting financial transactions, facilitating ease and convenience in purchasing goods and services online. These solutions encompass a range of payment methods, such as electronic transfers, automated payment systems, digital wallets, and commercial card systems. Online payment systems provide the ability to execute transactions at any time and from any location, significantly enhancing user flexibility and convenience (Dinh, 2024; Niankara & Traoret, 2023). The systems include tools like credit cards, electronic wallets, electronic money, and wireless payment systems, which streamline digital commerce by eliminating the need for physical cards or signatures during transactions (Dinh, 2024; Niankara & Traoret, 2023).

Global Adoption: Amidst the COVID-19 pandemic, there was a notable surge in worldwide interest in digital payment transactions, fueled by the embrace of contactless payment options like digital wallets and mobile payments. The 2021 Global Findex Survey showed an increase in the use of digital payment solutions in 123 countries, with 127,854 participants noting a preference for cashless payments (Niankara & Traoret, 2023).

In Vietnam, the Fourth Industrial Revolution accelerated commercial banks' adoption of electronic services, especially electronic payment. Due to their efficiency and convenience, consumers now prefer many electronic payment options, such as Internet Banking, QR code scanning, e-wallets, and payment gateways (Dinh, 2024).

The increased preference for real-time payments globally has been attributed to technological advancements and the need for seamless financial transactions. Many consumers now use digital solutions for irregular online purchases and regular bill settlements, maximising utility from cashless payment methods while considering various socio-economic and demographic factors.

1.8.4. Digital Wallets

Digital wallets are now a significant aspect of digital financial solutions, offering users a secure and convenient way to transact via mobile devices. These services allow users to store their smartphone payment details and make online and offline payments for goods and services (Shetu et al., 2022).

Technological progress and the growing prevalence of smartphones have significantly impacted the rise of digital wallets. As noted by Shetu et al. (2022) and Caron (2022), the widespread adoption and use of digital wallets in Sub-Saharan Africa encounter various obstacles, such as concerns regarding security, insufficient infrastructure, and trust issues among users. Studies suggest that although digital wallets can improve financial inclusion by offering a cashless payment alternative, their effectiveness largely relies on overcoming these challenges.

1.8.5. Digital Banking

Foka and Fossi (n.d.) and Slazus and Bick (2022) provide essential insights into adopting digital banking and FinTech services, highlighting critical factors and frameworks influencing user behaviour and financial literacy. Both studies emphasise the importance of understanding individual user behaviour and competence in financial management, particularly during the accelerated adoption of digital financial services amid the COVID-19 pandemic. However, their research approaches and findings have notable similarities and gaps.

Foka and Fossi (n.d.) focus on the individual user perspective, employing theoretical frameworks such as the Technology Acceptance Model (TAM), Diffusion of Innovation Theory, Economic Theory of Trust, and Technology Transfer Theory to explain the relationship between FinTech and financial literacy. However, a broader comparative analysis across multiple countries and industries within Sub-Saharan Africa is needed.

Slazus and Bick (2022) investigate the factors influencing consumer adoption of FinTech services, including digital banking in South Africa, focusing on perceived usefulness, ease of use, trust, and social influence. However, their study could benefit from a broader comparative perspective across different regions and industries to enhance generalizability. Additionally, exploring the broader systemic and industry-specific impacts of FinTech adoption would be crucial for understanding its macro-level influence on financial inclusion.

Both studies highlight the need for a comprehensive, cross-country, and cross-industry analysis to provide a holistic view of digital financial solutions' impact on financial inclusion in Sub-Saharan Africa. By addressing these gaps, future research can better understand the broader systemic and industry-specific factors that influence FinTech adoption and its potential to enhance financial inclusion on a macro scale (Foka & Fossi, n.d.; Slazus & Bick, 2022).

1.9. UTAUT2 FRAMEWORK

A theoretical framework provides a structured basis for examining and making sense of data in a research study (Grant & Osanloo, 2014). It comes from proven theories supported by real-world research, ensuring the study is based on dependable and verified concepts (Warmbrod, 1986). This study uses UTAUT2, an expansion of the original UTAUT, to examine the uptake and utilisation of Digital Financial Solutions in Sub-Saharan Africa (Venkatesh et al., 2012).

UTAUT2 includes seven key constructs:

- Performance expectancy is the degree to which technology benefits consumers in performing certain activities (Venkatesh et al., 2012).
- Effort expectancy is the degree of ease consumers use technology (Venkatesh et al., 2012).
- Social influence: The extent to which consumers perceive those crucial others (e.g., family and friends) believe they should use the technology (Venkatesh et al., 2012).
- Facilitating conditions: The degree to which consumers believe that an organisational and technical infrastructure exists to support the use of the technology (Venkatesh et al., 2012).
- Hedonic motivation: The fun or pleasure of using the technology (Venkatesh et al., 2012).
- Price value: Consumers' cognitive trade-off between the perceived benefits of the applications and the monetary cost of using them (Venkatesh et al., 2012).
- Habit: The extent to which people perform behaviours automatically because of learning (Venkatesh et al., 2012).

1.9.1. Comparison with other models

Technology Acceptance Model (TAM)

Davis (1989) introduced the Technology Acceptance Model, which highlights perceived usefulness and ease of use as its main components. Although TAM is crucial in technology adoption studies, it has limitations and fails to consider all the factors affecting technology adoption, especially in consumer settings.

Although TAM is helpful in certain situations, it cannot fully understand the intricacies of user behaviour when adopting new technologies (Davis, 1989).

Extended TAM (TAM2)

TAM2 builds upon TAM by adding elements like social influence and cognitive instrumental processes (Venkatesh & Davis, 2000). Nonetheless, there is still a requirement for a thorough examination of hedonic motivation and habit, as it plays a crucial role in comprehending the uptake of technology in consumer settings (Venkatesh & Davis, 2000).

Theory of Planned Behaviour (TPB)

The Theory of Planned Behaviour, developed by Ajzen in 1991, consists of components such as attitude, subjective norm, and perceived behavioural control. Even though the Theory of Planned Behaviour (TPB) offers a broader view of intentions, it fails to consider technology-related aspects such as performance and effort expectations directly, thus restricting its usefulness in studies on adopting technology (Ajzen, 1991).

Diffusion of Innovations (DOI)

Rogers (2003) discusses how innovations spread throughout a social system over time in his Diffusion of Innovations theory. DOI is essential for grasping the overall adoption process, but it requires additional specific constructs at the individual level from UTAUT2, like hedonic motivation and habit (Rogers, 2003).

Model of PC Utilization (MPCU)

The Model of PC Utilisation (Thompson et al., 1991) emphasises factors like job fit, complexity, and long-term consequences. While relevant for organisational contexts, MPCU must fully capture the consumer-oriented factors critical in adopting DFS, such as hedonic motivation and price value (Thompson et al., 1991).

1.10. UTAUT2: Behavioural intention to adopt DFS

This section examines the key factors influencing the behavioural intention to adopt DFS in Sub-Saharan Africa, focusing on performance expectancy, effort expectancy, social influence, and facilitating conditions as outlined in the research objective.

1.10.1. Performance Expectancy

Studies indicate that effort expectancy is one of the most critical factors influencing usage intention (Schmitz et al., 2022). This is also noted in Yengeni (2020), where she highlights that FinTech, particularly mobile money, significantly enhances financial inclusion by making financial services more accessible. This suggests that users perceive FinTech as beneficial for improving their financial situation. This construct helps understand whether users believe that DFS will enhance their financial management, improve access to financial services, and ultimately improve their financial well-being. Given the significant unbanked population in Sub-Saharan Africa, understanding performance expectancy can shed light on whether DFS can meet users' expectations for financial improvement (Venkatesh et al., 2012; Yengeni, 2020).

In this study, performance expectancy will be measured using a set of survey questions designed to assess the perceived usefulness of DFS. Respondents will rate statements related to the benefits and advantages of using DFS on a Likert scale. Statistical analysis, such as regression analysis, will be used to determine the influence of performance expectancy on the behavioural intention to adopt DFS (Schmitz et al., 2022).

1.10.2. Effort Expectancy

Effort expectancy is crucial in understanding the ease of use associated with DFS. In the selected regions with varying levels of digital literacy, the perceived ease of use can significantly impact the adoption rates of DFS. This construct helps identify whether potential users find DFS intuitive and user-friendly, essential for widespread adoption (Venkatesh et al., 2012; Slazus & Bick, 2022). Slazus and Bick (2022) find that perceived ease of use (PEOU) significantly

influences the adoption of FinTech services, indicating that users are likelier to adopt technology they find easy to use.

Effort expectancy will be evaluated through survey questions that gauge respondents' perceptions of the ease of using DFS. Items will focus on the simplicity of performing transactions, navigating the platform, and overall usability. Data collected will be analysed using statistical techniques to establish the relationship between effort expectancy and the intention to adopt DFS (Schmitz et al., 2022).

1.10.3. Social Influence

Social influence examines the impact of peer pressure and community opinions on adopting DFS. In collectivist cultures, prevalent in many parts of Sub-Saharan Africa, the opinions and behaviours of peers and community members can significantly influence individual decisions. Understanding social influence can provide insights into how social networks and community endorsements affect the adoption of DFS (Cele & Mlitwa, 2024).

To test social influence, the study will include survey questions that assess the perceived importance of recommendations and opinions from family, friends, and community leaders regarding DFS. These questions will be rated on a Likert scale, and the collected data will be analysed to determine the strength of social influence on the intention to adopt DFS (Slazus & Bick, 2022).

1.10.4. Facilitating Conditions

Facilitating conditions refer to the availability of resources and support that make adopting and using DFS feasible. This includes technological infrastructure, customer support, and educational resources. In Sub-Saharan Africa, where infrastructure can be unevenly distributed, facilitating conditions play a critical role in enabling or hindering the adoption of DFS (Venkatesh et al., 2012; Slazus & Bick, 2022).

The study will measure facilitating conditions through survey items that inquire about the availability and reliability of internet access, mobile network coverage, customer service quality, and the availability of user training programs. Responses will be analysed to identify how these conditions affect the adoption and continuous use of DFS (Schmitz et al., 2022).

1.11. UTAUT2: The use behaviour of DFS

This section explores the factors that influence the actual use behaviour of DFS in Sub-Saharan Africa, focusing on facilitating conditions, habits, and behavioural intention as outlined in the research objective.

1.11.1. Facilitating Conditions

Facilitating conditions is crucial for ensuring users have the necessary resources and support to continue using DFS. This includes reliable internet access, adequate mobile network coverage, effective customer service, and accessible educational resources. In regions like Sub-Saharan Africa, where infrastructure can be inconsistent, understanding the role of facilitating conditions helps identify whether users can consistently use DFS without significant barriers (Cele & Mlitwa, 2024; Slazus & Bick, 2022).

In evaluating facilitating conditions, the study will incorporate survey questions that will assess the technological infrastructure's availability and reliability, the quality of customer support, and the accessibility of user training programs. Feedback will be gathered using a Likert scale, and statistical techniques will be employed to assess how facilitating conditions affect DFS's usage behaviour.

1.11.2. Habit

Habit refers to the degree to which individuals automatically use Digital Financial Solutions due to repeated behaviour over time. This concept is crucial in understanding how regular use of DFS becomes a routine part of users' financial activities (Venkatesh et al., 2012). To measure Habit, this study will employ

survey items that assess the frequency and consistency of DFS usage among respondents. The survey questions will assess if users have incorporated DFS into their daily financial routines to the extent that its use has become a habit. Respondents will be queried about how often they use DFS for transactions and whether these activities are carried out with minimal conscious effort. (Venkatesh et al., 2012).

1.11.3. Behavioural Intention

Yengeni's (2020) and Slazus and Bick's (2022) research shows that positive behavioural intention, driven by perceived usefulness and ease of use, translates into actual use behaviour. Behavioural intention will be assessed using survey questions that capture users' intentions to continue using DFS for their financial needs. The survey will include items related to the perceived benefits and ease of using DFS, and responses will be collected on a Likert scale. Statistical techniques will be employed to analyse how behavioural intention influences the actual use behaviour of DFS (Yengeni, 2020; Slazus & Bick, 2022).

1.12. Barriers to the adoption and use of DFS

This section examines the barriers to adopting and using DFS in Sub-Saharan Africa, focusing on perceived risks, security concerns, infrastructural challenges, and digital literacy as outlined in the research objective.

1.12.1. Perceived Risks

To evaluate perceived risks, the research will incorporate survey inquiries that gauge participants' worries regarding financial loss, fraud, and data security while utilising DFS. The Likert scale will be used to rate the survey items, and descriptive statistics and regression analysis will be conducted to assess how perceived risks affect the adoption and usage of DFS. Identifying areas where user concerns are highest can help develop strategies to reduce these risks, as stated in the study by Foka & Fossi (n.d.).

1.12.2. Security Concerns

Security concerns are closely related to perceived risks but focus on the safety of the digital platforms used for financial transactions. High-security concerns can lead to a lack of trust in DFS, which is crucial for their adoption and sustained use. Understanding security concerns helps highlight the importance of robust security measures and transparent practices in building user trust. Slazus and Bick (2022) note that security concerns are a significant inhibitor, emphasising the need for secure platforms to build user trust. This underscores financial institution's need to invest in advanced security technologies to protect user data and build confidence.

1.12.3. Infrastructure Challenges

Problems with infrastructure relate to the physical and technological systems needed for efficient DFS utilisation, including internet access, mobile service reception, and financial service availability. More infrastructure is needed to ensure the uptake and utilisation of DFS by restricting access and diminishing the dependability of these services. A grasp of infrastructural obstacles allows for pinpointing key areas requiring investment and growth to bolster DFS implementation. Inadequate digital infrastructure in Africa is highlighted as a significant obstacle by Ololade (2024) when discussing infrastructural limitations. This emphasises the importance of making significant investments in infrastructure to facilitate the extensive adoption of DFS.

1.12.4. Digital Literacy

Digital literacy is the knowledge and skills required to use digital technologies, including DFS, effectively. A lack of digital literacy can prevent individuals from fully utilising DFS, limiting their benefits. Understanding digital literacy levels helps identify educational needs and the types of support required to enhance users' capabilities and confidence in using DFS. Foka and Fossi (n.d.) emphasise the importance of digital literacy, suggesting that a lack of knowledge and skills in using digital technologies prevents wider adoption. This underscores the need for educational programs to improve digital literacy among potential users.

1.12.5. Regulatory landscape

Effective regulation is essential for creating an environment where Digital Financial Services can flourish. However, several regulatory challenges must be addressed to improve financial inclusion and promote the broader adoption of DFS.

One major issue is the inconsistency and fragmentation of regulatory frameworks across different countries. Each country has regulations governing financial services, leading to confusion and difficulties for DFS providers operating in multiple jurisdictions (Ashoer et al., 2024). This lack of harmonisation can hinder the scalability of DFS solutions and complicate service providers' compliance efforts. Studies as per Ashoer et al. (2024), Caron (2022), and Neves et al. (2023) have shown that regulatory inconsistencies can lead to increased costs and operational complexities for DFS providers, which can impede the expansion of services across borders.

Overly stringent regulatory requirements can also stifle innovation and limit market entry for new players in the DFS sector (Caron, 2022). High capital requirements for DFS providers and complex licensing processes can act as barriers to entry (Caron, 2022). While intended to ensure stability and security, these regulations can inadvertently limit the availability and diversity of DFS offerings, thereby restricting access for potential users. High compliance costs and regulatory burdens can discourage small and medium-sized enterprises from entering the DFS market (Ashoer et al., 2024)

Furthermore, the swift progress of digital financial technologies frequently surpasses the advancement of corresponding regulatory structures. This may result in DFS providers requiring clarity and support from regulatory bodies, creating an uncertain environment (Ashoer et al., 2024). Clear instructions and assistance may prevent providers from being reluctant to introduce new products or expand services, which could hinder the growth and acceptance of DFS. Uncertainty in regulations can significantly hinder the advancement of DFS by making it easier to enter the market and raising costs for complying with rules.

Regulatory obstacles also present significant obstacles for cross-border transactions, which are vital for financial inclusion, particularly in areas with large migrant communities (Ashoer et al., 2024; Neves et al., 2023). Obstacles due to restrictions on data transfers between countries and varying compliance requirements can hinder the smooth completion of these transactions. Protecting data privacy and security is extremely important in the digital financial world. Adhering to regulatory data protection and privacy demands may prove difficult for DFS providers, especially those with limited resources (Caron, 2022). Regulators must maintain a careful equilibrium to safeguard user data and allow for the smooth functioning of DFS. Insufficient or overly limiting data protection rules may impede the effectiveness and trust of users in DFS platforms.

1.13. Impact of DFS adoption on financial inclusion

This section explores the impact of DFS adoption on financial inclusion, focusing on access to financial services, usage frequency, and the range of financial products as outlined in the research objective.

1.13.1. Access to financial services

Having access to financial services is an essential factor in achieving financial inclusion. It pertains to the capacity of people, specifically those in unbanked or underbanked communities, to access financial services like banking, credit, savings, and insurance. Improving people's ability to use financial services is vital for encouraging economic growth, lessening poverty, and attaining solid financial stability. Determining the effectiveness of these technologies in bridging the financial inclusion gap relies on understanding how DFS enhances access. Yengeni (2020) stated that FinTech plays a significant role in increasing the availability of financial services to those without bank accounts, thus boosting financial inclusion through improved accessibility. Likewise, Ololade (2024) stresses that FinTech advancements have allowed a more comprehensive range of individuals to obtain financial services that were previously out of reach.

The study will use survey questions to evaluate how DFS affects access to financial services by measuring respondents' access to different financial

services before and after adopting DFS. These inquiries will centre on the accessibility and convenience of utilising services such as mobile banking, digital payments, and online lending.

1.13.2. Usage frequency

Higher usage frequency indicates that users actively use financial services, which can lead to improved financial management and stability. Frequent usage of DFS implies that these solutions effectively meet users' needs and are integrated into their daily financial practices. Cele and Mlitwa (2024) found that FinTech solutions increase the frequency of financial transactions, indicating higher engagement with financial services. This increased engagement suggests that users find these services valuable and relevant to their financial needs (Cele & Mlitwa, 2024; Slazus & Bick, 2022).

1.13.3. Range of Financial Products

A more comprehensive range of products can provide more tailored financial solutions to meet various user needs, enhancing financial inclusion. Understanding how DFS expands the variety of financial products helps to evaluate their effectiveness in offering comprehensive financial services to underserved populations. Ololade (2024) discusses how FinTech broadens the array of financial products available to users, allowing for a more extensive range of services. Yengeni (2020) also highlights that FinTech innovations have broadened the scope of financial services, making them more versatile and accessible.

1.14. Proposed Theoretical Framework

This study proposes an enhanced version of the UTAUT2 framework to comprehensively understand the adoption and impact of DFS on financial inclusion in Sub-Saharan Africa. This new framework integrates critical barriers specific to the region, offering a more holistic view of the factors influencing DFS adoption and usage. The selection of UTAUT2 aligns with prior research, validating its robustness in predicting behavioural intentions toward digital

financial solutions, as evidenced in recent studies such as Kamara and Yu (2024).

1.14.1. UTAUT2 Framework with integrated barriers

Original UTAUT2 constructs:

i. Performance Expectancy: The degree to which using DFS will provide benefits in performing financial activities.
ii. Effort Expectancy: The degree of ease associated with the use of DFS.
iii. Social Influence: The degree to which individuals perceive that essential others believe they should use DFS.
iv. Facilitating Conditions: The degree to which an individual believes that an organisational and technical infrastructure exists to support the use of DFS.
v. Hedonic Motivation: The fun or pleasure derived from using DFS.
vi. Price Value: The cognitive trade-off between the perceived benefits of using DFS and the monetary cost.
vii. Habit: The extent to which people tend to perform behaviours automatically due to learning.

Integrated barriers:

I. Perceived risks: Concerns about financial loss, fraud, and data security when using DFS can deter potential users and impact their trust in DFS.
II. Security concerns: The safety of digital platforms used for financial transactions. High-security concerns can lead to a lack of trust and lower adoption rates.
III. Infrastructure challenges: Physical and technological limitations, such as internet connectivity and mobile network coverage, are necessary for practical DFS usage.
IV. Digital literacy is the knowledge and skills required to use DFS effectively. A lack of digital literacy can prevent individuals from fully utilising DFS, limiting their benefits.

V. Regulatory Landscape: Inconsistent and stringent regulations hinder DFS adoption by creating operational complexities, increasing costs, and limiting market entry.

The improved framework further develops the UTAUT2 model by incorporating obstacles specific to the Sub-Saharan African environment, such as perceived risks, security worries, infrastructural obstacles, and digital literacy. This incorporation enhances the framework's relevance and inclusivity, tackling the distinct obstacles in the area while offering a deeper insight into the factors impacting DFS adoption and usage. Considering these extra factors, the framework guarantees a comprehensive examination of the influences on DFS adoption, providing an enhanced ability to predict and clarify differences in DFS adoption and usage among various demographic and geographic sectors in Sub-Saharan Africa.

Moreover, this improved structure offers essential perspectives for stakeholders, such as policymakers, financial institutions, and technology developers. By recognising the particular obstacles to DFS adoption, these parties can create better strategies to encourage DFS adoption and financial inclusion. This focused strategy tackles the distinct obstacles in the region, ensuring that the research results are valuable and implementable, ultimately aiding in improving financial access in Sub-Saharan Africa.

1.15. Conclusion of Literature Review

The literature review highlights the crucial importance of digital financial solutions (DFS) in enhancing financial inclusion in Sub-Saharan Africa. Studies have indicated that mobile money, online payment options, and digital banking have benefited financial inclusion by improving access to financial services and diversifying the number and type of financial transactions. However, obstacles must be overcome for the widespread implementation of DFS, including technological and infrastructural barriers, socio-economic factors, regulatory and policy constraints, and issues related to digital literacy. The UTAUT2 model provides a strong foundation for comprehending the adoption factors through its

constructs of performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, and habit. Additionally, obstacles like perceived risks, security issues, infrastructural hurdles, and digital literacy in the framework boost its significance and predictive ability in Sub-Saharan Africa.

1.15.1. Hypothesis 1

The use of Digital Financial Solutions will significantly impact the intention of users in Sub-Saharan Africa to adopt DFS. This hypothesis is based on the belief that users will see DFS as beneficial for improving their financial management and increasing access to financial services.

1.15.2. Hypothesis 2

The ease of use of DFS significantly affects the intention to adopt these solutions. Users who find DFS intuitive and easy to navigate are likelier to adopt and continue using these services.

1.15.3. Hypothesis 3

Social influence, such as recommendations and opinions from family, friends, and community leaders, will significantly impact the intention to adopt DFS. This hypothesis is based on the collectivist cultural contexts in Sub-Saharan Africa, where community endorsement is critical in individual decision-making.

1.15.4. Hypothesis 4

The availability of resources and support, such as technological infrastructure and customer service, will significantly influence DFS's actual usage behaviour. This hypothesis emphasises the importance of creating supportive environments for sustained DFS usage.

1.15.5. Hypothesis 5

The enjoyment of using DFS significantly influences the intention to adopt these solutions, leading to regular engagement.

1.15.6. Hypothesis 6

The perceived trade-off between DFS's benefits and monetary cost will significantly influence the behavioural intention to adopt it. Users considering DFS cost-effective are likelier to adopt and continue using these services.

CHAPTER 3: RESEARCH METHODOLOGY

3.1. Research Paradigm

This study employs a positivist method to examine how adopting digital DFS affects financial inclusion in Sub-Saharan Africa. It operates under the belief that a measurable and quantifiable objective reality exists. A positivist ontology asserts that reality is constant and exists outside of us to recognise patterns and connections within this reality (Guba & Lincoln, 1994).

The research embraces a quantitative epistemology, indicating that understanding DFS adoption is most effectively gained through unbiased evaluation and statistical examination. This includes utilising surveys and alternative instruments to collect numerical data for statistical examination, testing hypotheses, and establishing findings that can be generalised (Creswell, 2014). Knowledge comes from observing and measuring real-world experiences. Information gathered from organised surveys accurately represents the elements described in the UTAUT2 model (Venkatesh et al., 2012).

The positivist paradigm remains neutral, employing standardised methods for data collection and analysis (Mertens, 2015). The research process guarantees ethical behaviour, openness, confidentiality, and willingness to participate. This involves getting permission from participants, keeping data private, and preventing harm to participants (Israel & Hay, 2006).

3.2. Research approach

The study intends to examine how DFS adoption impacts financial inclusion in Sub-Saharan Africa through a quantitative method. This method enables the objective assessment of variables associated with DFS adoption, which aligns with the study's aim to investigate these factors and their connections methodically.

The quantitative method is appropriate for examining particular hypotheses from the UTAUT2 model (Venkatesh et al., 2012). Statistical techniques will be used

to analyse the suggested connections between variables and establish their importance, which is essential for confirming the theoretical framework and grasping the factors influencing DFS uptake and utilisation (Creswell, 2014).

We will use large-scale survey data from various countries in Sub-Saharan Africa to ensure that the results can be transferred to a broader population (Bryman, 2012). The research strives to generate regional findings that are both pertinent and practical by including a variety of demographic and socio-economic groups.

Additionally, applying quantitative methods will facilitate the use of advanced statistical techniques such as regression analysis and structural equation modelling for data analysis (Hair et al., 2014). These techniques can improve the understanding of the complex relationships between variables and develop predictive models, providing deeper insights into the factors influencing DFS adoption and their impact on financial inclusion.

The quantitative approach relies on several fundamental assumptions. It is based on the positivist paradigm, which states that reality is objective and can be measured and quantified. This methodology aligns with statistical techniques to identify patterns and relationships in the data (Guba & Lincoln, 1994). The research embraces this perspective to provide measurable and impartial insight into the elements that affect the deployment and impact of DFS on financial inclusion.

In addition, some researchers believe the research procedure can be repeated, yielding reliable and consistent outcomes. This is achieved using standardised tools and methods (Babbie, 2015). The findings gain credibility through replicability, enabling verification and validation by the scientific community.

Next, it is believed that essential concepts can be accurately gauged and assessed with organised questionnaires. This enables gathering quantitative data that can be statistically examined (De Vaus, 2014). The capability to measure variables is crucial for utilising advanced statistical methods.

These assumptions are well-aligned with the research aims of evaluating and understanding the factors that drive the adoption of DFS and their effects on financial inclusion. The objective evaluation and statistical examination support the study's hypotheses (Venkatesh et al., 2012). Furthermore, using structured tools guarantees that data is gathered consistently and efficiently, aiding in the objective assessment of variables (Fowler, 2013). The emphasis on empirical data ensures that the results are grounded in observable and quantifiable information, which boosts the validity and reliability of the research (Creswell, 2014).

3.3. Research design

The overall study design adopted for this research is a survey design. This selection was made because it enables the gathering of extensive data from a varied and widely spread population in Sub-Saharan Africa. Through a questionnaire, the research seeks to collect numerical information about the factors that affect the acceptance and utilisation of digital financial solutions (DFS) and how they affect financial inclusivity.

The survey format aligns with the research objectives by effectively collecting information on user perspectives, behaviours, and demographic characteristics, which are critical to the UTAUT2 model (Venkatesh et al., 2012). This facilitates the collection of quantifiable data needed for statistical analysis to investigate hypotheses and identify relationships between variables, vital for addressing research questions and confirming the UTAUT2 constructs. Furthermore, the design allows for data collection from multiple participants, increasing the findings' reliability and generalizability across different contexts in Sub-Saharan Africa (Groves et al., 2009).

Advantages

I. Surveys allow for gathering data from numerous respondents, which boosts the study's statistical power and representation (Fowler, 2013).

II. Surveys have an organised format that makes it easier to gather quantifiable data, allows for rigorous statistical analysis, and yields transparent and objective results (De Vaus, 2014).
III. Surveys employ standardised questions to maintain consistency in data collection and minimise researcher bias (Babbie, 2015).
IV. An extensive and diverse sample improves the possibility of applying the results to a broader population (Bryman, 2012).

Disadvantages

I. According to Dillman et al. (2014), surveys might only partially capture the depth and complexity of participants' experiences and perceptions compared to qualitative methods.
II. Subsequently, a second experiment was conducted to confirm the initial findings. Response bias is possible, as respondents may give socially acceptable answers or struggle to comprehend the questions (Podsakoff et al., 2003).
III. The organised format of survey queries might restrict participants' capacity to offer intricate or extensive answers (Groves et al., 2009).
IV. Low response rates or nonresponse can impact the sample's representativeness and the validity of the results (Dillman et al., 2014).

3.4. Data collection methods

Structured questionnaires will be used to gather data for this study. This approach is selected for its capacity to collect measurable information from a wide and varied group, which is crucial for the goals of this research. The surveys will be created to gather information on different aspects that affect the acceptance and utilisation of DFS and their effect on financial inclusion in Sub-Saharan Africa.

3.4.1. Questionnaire design

The survey will be based on the components of the UTAUT2 model: performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, and habit (Venkatesh et al., 2012). It will contain closed-ended questions, mainly on Likert scales from 1 to 6, to assess the participants'

opinions, beliefs, and practices regarding DFS. The questions will be written to be easily understandable and not leave any room for confusion. This will ensure the respondents understand them correctly and provide the best possible answers.

3.4.2. Pilot testing

Before implementation, a trial run of the questionnaire will be conducted using a small group (around 30 participants) to pinpoint and address any problems with question clarity, wording, and overall layout. The pilot test feedback will help improve the questionnaire and ensure it effectively captures the required data.

3.4.3. Distribution

The questionnaire will be distributed electronically using Qualtrics. Invitations to participate in the survey will be sent via email, social media, and relevant online communities.

3.4.4. Justification

a) Alignment with research objectives

Structured surveys are appropriate for gathering numerical data on the main components of the UTAUT2 model. They permit the orderly gathering of data that can be statistically examined to evaluate the research hypotheses (Creswell, 2014). This method guarantees that the gathered data is specifically related to the research goals, allowing for a comprehensive examination of the factors impacting the acceptance and utilisation of digital financial solutions (DFS) in Sub-Saharan Africa.

b) Large-scale data collection:

Surveys allow for gathering data from many participants in various countries, improving the accuracy and applicability of the results (Groves et al., 2009). Reaching a broad and diverse population in the study can help capture various experiences and perceptions, leading to a complete grasp of the factors involved.

c) Standardisation

Structured questionnaires guarantee consistency by ensuring all respondents are asked identical questions in the same manner, which limits response variability caused by varying interpretations of questions. Standardisation is essential to collect dependable and accurate data (Fowler, 2013). Regularly asking questions reduces the chance of prejudice and guarantees that the information gathered can be compared among various participants and situations.

d) Efficiency and cost-effectiveness

Surveys are inexpensive ways to gather substantial data over a brief period. They can be used for large-scale studies without requiring many resources, making them practical (Babbie, 2015). Questionnaires appeal to researchers on tight budgets and deadlines because they can quickly collect significant data at a lower cost.

e) Quantifiable data:

Closed-ended questions make it easier to quantify responses, which, in turn, aids in statistical analysis and data interpretation. De Vaus (2014) pointed out that testing the relationships between variables and deriving meaningful conclusions is important. Measurable data allows advanced statistical methods to detect trends, evaluate theories, and create forecasts, strengthening the reliability and credibility of the research results.

3.5. Population and sample

3.5.1. Population

The research population consists of adult individuals who are either current or potential users of DFS in six Sub-Saharan African countries: Kenya, Nigeria, Ghana, Uganda, Tanzania, and South Africa. This group includes people of different ages, genders, levels of education, and socio-economic statuses.

The chosen countries have different levels of DFS adoption, which provides a diverse context for the analysis of the factors that influence DFS adoption and the impact of these factors on financial inclusion. This variation helps understand

how the results can be generalised across different socio-economic and cultural contexts. These countries have shown high usage and growth rates in DFS, thus making them relevant contexts for investigating the adoption of these solutions and their impact on financial inclusion (GSMA, 2023).

3.5.2. Sample and sampling method

The intended sample size is roughly 300 participants, with about 50 individuals from each of the six countries: Kenya, Nigeria, Ghana, Uganda, Tanzania, and South Africa. I will utilise both convenience sampling and snowball sampling techniques. This approach guarantees practicality, accessibility, and a varied, representative sample.

Convenience Sampling

Convenience sampling is selected because it focuses on participants who are easily accessible and willing to participate in the research. This method is both practical and cost-effective, facilitating swift data collection. I intend to leverage existing networks, online platforms, and community groups to engage diverse participants who can offer valuable insights into the adoption and use of DFS. This approach is particularly advantageous for preliminary research, as it seeks to establish an initial understanding of the research issue (Cambridge, 2023).

Snowball Sampling

Snowball sampling will be employed alongside convenience sampling to augment the sample size and engage participants who may be difficult to identify through conventional methods. This approach starts with initial participants, "seeds," who will then recommend other potential respondents within their networks that meet the study's criteria (PLOS ONE, 2023). Snowball sampling is advantageous for reaching hard-to-access or hidden populations, ensuring that the study encompasses a broader and more diverse audience (PLOS ONE, 2023).

3.6. The research instrument

A structured questionnaire will be the main research instrument for this study. This tool is intended to gather information on the factors that affect the adoption and use of digital financial services (DFS) and their effects on financial inclusion in Sub-Saharan Africa. The survey is based on the framework of the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) and is relevant to the particular research questions of the study.

3.6.1. Questionnaire structure

Section A: UTAUT2 Constructs:

Measure the critical constructs of the UTAUT2 framework, hypothesised to influence the behavioural intention and actual use of DFS.

- Performance expectancy: Questions designed to assess how DFS will benefit consumers performing certain activities.
- Effort expectancy: Questions evaluating the ease of use associated with DFS.
- Social influence: Questions to measure the extent to which consumers perceive that essential others believe they should use DFS.
- Facilitating conditions: Questions will be asked to determine the availability of resources and support necessary to use DFS.
- Hedonic motivation: Questions assessing the fun or pleasure of using DFS.
- Price value: Questions to evaluate the cognitive trade-off between the perceived benefits of using DFS and the monetary cost.
- Habit: Questions to measure the extent to which people perform behaviours automatically because of learning.

Section B: Behavioural intention and use behaviour:

To capture the respondents' behavioural intention to use DFS and their actual usage behaviour. Questions were designed to assess the intention to use DFS and to measure the actual usage of DFS, including frequency and types of transactions conducted.

Section C: Financial Inclusion Impact:

To evaluate the impact of DFS adoption on financial inclusion. Questions to measure changes in access to financial services, usage frequency, and the range of financial products used.

Section D: Demographic information:

Collecting background information about the respondents will help understand the demographic factors influencing DFS adoption. Questions on age, gender, education level, employment status, income level, and urban/rural residence.

3.6.2. Appendix and cover letter

The entire survey will be added to the dissertation appendix. This will ensure transparency and enable other researchers to reproduce the study if necessary. The questionnaire will accompany a cover letter outlining the research's objectives, ensuring respondents' rights, and clarifying their data usage. The letter will highlight the importance of privacy, willingness to participate, and the choice to withdraw at any point.

3.7. Procedure for data collection

The data collection will involve online surveys to ensure broad reach and accessibility to respondents in different regions within the target countries. The following steps outline the detailed procedure for data collection:

Step 1: Getting ready

The finalised structured questionnaire will incorporate feedback from the pilot test, as outlined in Section 3.6. The ethics committee will approve it. A consent form that provides information on the study's goals, the rights of the participant, and the usage of their data will be created and included along with the survey.

Step 2: Selecting and enlisting participants.

Aiming for 300 participants, the study will include 50 respondents from each of the six countries: Kenya, Nigeria, Ghana, Uganda, Tanzania, and South Africa. I

will use both convenience sampling and snowball sampling techniques. This mix guarantees functionality, ease of use, and a varied, inclusive selection.

Step 3: Gathering information.
Qualtrics will be used to develop the online questionnaire. The survey link will be shared via email invitations, social media posts, and community forums. Reminders will be sent to boost response rates, and responses will be monitored in real-time to resolve any issues or queries from participants. Everyone must read and confirm the informed consent document before finishing the survey, guaranteeing an understanding of their rights and the study's aim.

Step 4: Managing and Storing Data
All replies will be anonymous to safeguard participants' identities, using distinct ID numbers for tracking while maintaining privacy. Data from online surveys will be kept on secure servers that only authorised personnel can access, and regular backups will be made to avoid losing any data. The dataset will be checked for inconsistencies, missing values, and outliers to maintain its integrity and quality through data cleaning.

3.8. Data analysis strategies and interpretation

This study's data analysis will use descriptive statistics, regression analysis, and Multiple Regression Analysis (MRA) to answer research questions and test hypotheses from the UTAUT2 framework. The methods are chosen for their capacity to offer a thorough grasp of the connections between variables and to evaluate the effects of digital financial solutions (DFS) on financial inclusion in Sub-Saharan Africa.

3.8.1. Descriptive Statistics

Participants' demographic characteristics and essential statistics for every construct will be presented. The analysis will reveal important patterns and unusual data points, helping to understand how the sample population is distributed and what it looks like.

The analysis of survey participant data through descriptive statistics will present the fundamental characteristics of the collected information. Analysing sample demographics through age, gender, education, employment status and income will describe the respondents' profile. The calculations will determine central tendencies and dispersion values for each UTAUT2 construct and relevant variables through mean, median, mode, standard deviation and range measurements. Basic data understanding becomes possible through descriptive statistics because they create an organised summary of respondent characteristics and essential variables. Identifying data trends or anomalies remains essential for producing meaningful interpretations (Fowler, 2013; Field, 2018).

The demographic characteristics of participants, along with important statistics for each construct, will be presented. The analysis will reveal significant patterns and data outliers, which will help understand the sample distribution and characteristics.

3.8.2. Exploratory Factor Analysis (EFA)

The analysis will use Principal Axis Factoring and Promax rotation for Exploratory Factor Analysis to assess construct validity and reliability. EFA helps researchers discover hidden patterns between observed variables and their related latent constructs in the UTAUT2 framework. The suitability of running factor analysis will be determined by evaluating the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy together with Bartlett's test of sphericity. Cronbach's Alpha coefficients will confirm construct reliability by showing strong internal consistency when the values exceed 0.7 (Hair et al., 2018; Field, 2018).

3.8.3. Multiple Regression Analysis (MRA)

The analysis will use Principal Axis Factoring and Promax rotation to assess construct validity and reliability through Exploratory Factor Analysis (EFA). The UTAUT2 framework benefits from EFA to reveal hidden patterns between observed variables and latent constructs. The suitability of factor analysis will be determined by evaluating the Kaiser-Meyer-Olkin (KMO) measure of sampling

adequacy and Bartlett's test of sphericity. Cronbach's Alpha coefficients was used to confirm construct reliability by showing strong internal consistency when the values exceed 0.7 (Hair et al., 2018; Field, 2018).

Regression assumptions will be tested thoroughly, including:

- Linearity: Scatter plots and correlation matrices.
- Normality of residuals: Histograms of residuals.
- Multicollinearity: Variance Inflation Factor (VIF).
- Homoscedasticity: Graphs of residuals versus predicted values.

Independence of errors: Durbin-Watson statistic (Field, 2018; Pallant, 2020). Interpretation of regression coefficients will assess the significance, strength, and direction of relationships between independent and dependent variables, highlighting key predictors influencing DFS adoption and usage.

3.9. Possible limitations and challenges of the study

Despite being thorough and robust, this study may need more support and difficulties that could affect the results and their applicability. Recognising and accepting these constraints is crucial in comprehending the extent and relevance of the research results.

3.9.1. Methodological limitations

A significant limitation is the reliance on self-reported data collected through formal questionnaires. This method could introduce biases such as social desirability, recall, and response bias, as respondents might provide more socially acceptable answers than candid ones. The study's cross-sectional design also restricts data collection to a single time point. This restricts the capacity to establish causation and examine how behaviours and perceptions evolve.

3.9.2. Sampling limitations

Though attempts were made to establish a diverse sample through convenience and snowball sampling methods, there remains a possibility of sampling bias. It

is essential that demographic sectors, particularly those with limited internet access or lower literacy rates, are accurately represented. The disparities in internet access among various socioeconomic and geographic groups often contribute to this issue in online surveys (Vo et al., 2022; Smith et al., 2022).

Nonresponse bias can occur when specific individuals or groups are less inclined to participate in the survey. This can impact the sample's representativeness to the overall population and hinder the applicability of the results to a broader audience. For instance, those who show minimal interest in digital financial solutions or are wary of participating in online surveys may be less likely to respond, resulting in a skewed sample (Vo et al., 2022).

3.9.3. Data collection challenges

The process of acquiring participants from different backgrounds becomes challenging in rural areas because limited internet access makes it difficult to distribute surveys and obtain responses. The survey questions' understanding by respondents becomes problematic because their language abilities and literacy skills differ. Translating the survey into various local languages would help address this issue but could generate possible translation errors (Smith et al., 2022).

3.9.4. Analysis limitations

Self-reported data contains frequent inaccuracies, which produce measurement errors. Participants might understand survey questions incorrectly, while their memory of both behaviours and perceptions proves unreliable. The outcome of regression analysis depends on meeting fundamental assumptions, which include linearity, normality, homoscedasticity, and the absence of multicollinearity. The reliability of regression results becomes compromised when any of these assumptions fail to meet their requirements (Hair et al., 2018; Field, 2018).

3.9.5. Practical challenges

Implementing a detailed survey across various nations demands substantial financial investment and extended periods of work. The process of managing data collection becomes complex when trying to reach participants who live in distant locations. It is crucial to give all required information to participants while protecting their privacy and maintaining ethical standards, which proves difficult in multicultural settings. When they emerge, different cultural perspectives about privacy protection and data usage need thorough handling.

3.10. Quality Assurance

3.10.1. External validity

External validity describes the ability of research findings to be used across various settings, populations, and time periods (Creswell, 2014). This research enhances its external validity through participant recruitment from six Sub-Saharan African nations, including Kenya, Nigeria, Ghana, Uganda, Tanzania, and South Africa. The study includes nations at various stages of DFS adoption along with varying socio-economic profiles to analyse diverse user experiences and behaviours of DFS. The study's generalizability receives support from a significant and varied sample of 586 participants.

3.10.2. Internal validity

Internal validity measures the ability of research to measure its intended variables accurately. The research method ensures that the study results accurately represent the investigated reality (Creswell, 2014). The UTAUT2 framework serves as the research tool to identify DFS adoption factors (Venkatesh et al., 2012). The research instrument underwent a pilot test to resolve potential problems regarding clarity, wording, and design. Standardised questionnaires combined with uniform data collection procedures help reduce response variability.

3.10.3. Reliability

The research will establish the reliability of the measurement instrument through Cronbach's alpha as its primary assessment tool. According to Tavakol and Dennick (2011), Cronbach's alpha measures test item interrelatedness to determine internal consistency. A Cronbach's alpha value above 0.7 shows that the items measuring a construct consistently evaluate the same underlying concept, thus ensuring data reliability (Nunnally & Bernstein, 1994).

The research will apply Cronbach's alpha to evaluate all constructs in the UTAUT2 framework. The validation process will prove the accuracy of developed measurement items for these concepts while establishing the instrument's overall reliability.

3.11. Ethical considerations

Research must be conducted ethically because this ensures the study's integrity and the protection of participant rights and welfare. The research process will follow these ethical considerations, together with specific procedures for their implementation.

3.11.1. Informed consent

All research participants will get complete information about the study, through which they will learn its goals and methods, as well as both negative and positive aspects. The researcher will explain this information directly to participants to ensure they understand their full involvement. The study requires attendees to carefully review and sign an informed consent document before study participation. The document will outline participant rights, including the right to leave the study without any negative consequences. The survey will be in English, but consent forms will use straightforward language that all participants can understand, regardless of their literacy level.

3.11.2. Confidentiality and anonymity

In order to protect the identities of the participants, all data gathered will be made anonymous. Distinct identification numbers will be utilised in place of personal

data. Digital and physical data will be stored securely: digital data will be encrypted and stored on servers with passwords, while physical data will be stored in locked storage. Data access will only be available to the research team. If data is shared with third parties (such as for statistical analysis), it will be done in a way that does not include any personally identifiable information.

3.11.3. Minimising harm

The research includes feedback from surveys, which are typically relatively safe. Nevertheless, phrasing the questions carefully and allowing participants to skip any discomfort will reduce the likelihood of discomfort or distress.

3.11.4. Ethical Approval

The WBS ethics form will be filled out, detailing all ethical considerations and procedures. The necessary ethics committee will review and approve this form prior to the commencement of data collection. The research will start as soon as the Post-Graduate Committee has given complete ethical approval. This guarantees that the research complies with all ethical criteria established by the institution.

3.11.5. Transparency and Honesty

All participants will be informed of the study's aim, ensuring clarity regarding the research goals and data utilisation. Participants will be notified to ask for a synopsis of the research results. This encourages openness and enables participants to view the research results they helped with.

3.11.6. Cultural Sensitivity

The team will undergo cultural sensitivity training to guarantee respectful and suitable communication with participants from different cultural backgrounds. Research materials, such as consent forms and surveys, will be modified to align with the cultural norms and values of the target groups. While the survey will be in English, the training and preparation will ensure that the interactions and explanations are culturally suitable.

CHAPTER 4: DATA ANALYIS

4.1. Introduction

This chapter presents the analysis of survey data collected to assess the adoption of digital financial solutions in Sub-Saharan Africa. The study follows a structured approach, beginning with data screening and demographic characteristics, then validity and reliability assessments, and concluding with hypothesis testing. The findings are interpreted based on the research framework and objectives.

4.2. Data Screening

The survey data was extracted from Qualtrics in SPSS format. Responses with missing or incomplete data were removed, leaving a final sample of **586 valid responses**. Any remaining missing values were addressed using SPSS multiple imputation to ensure data completeness. Two distinct approaches were applied to handle missing data due to their differing contexts and implications for analysis.

4.2.1. Removal of Incomplete Responses

Initially, responses containing substantial missing or incomplete data (e.g., respondents who abandoned the survey early or skipped entire sections) were completely removed from the dataset. This was essential to maintain the integrity and quality of the analysis, as responses with excessive missing data could not reliably reflect the measured constructs.

4.2.2. Multiple Imputation for Remaining Missing Values

After removing significantly incomplete responses, the remaining dataset (586 respondents) had minimal, sporadic missing data (e.g., single skipped questions within otherwise complete surveys). Multiple imputation was employed using SPSS to estimate and fill in the missing values for these isolated cases. This statistical technique preserves data integrity and minimises bias, enabling complete-case analysis without losing valuable respondent information.

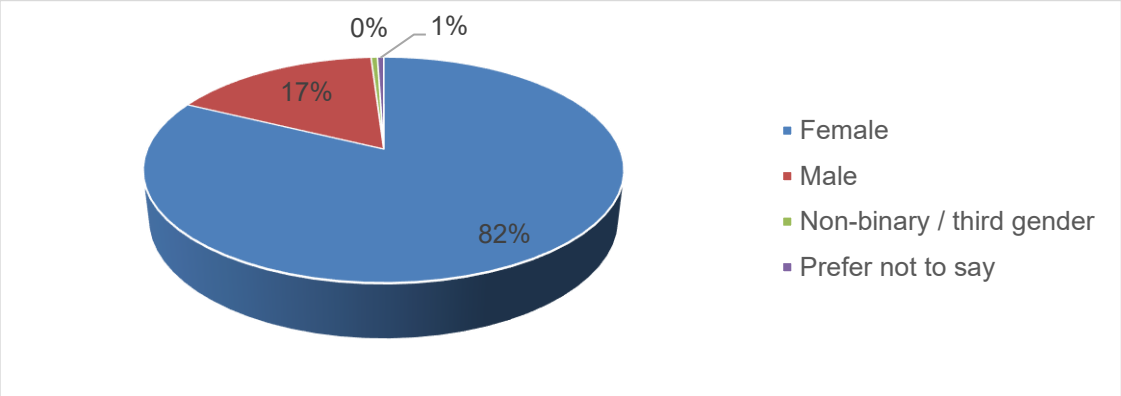
The decision to use these different treatments was guided by methodological best practices: extensive missing data were removed to ensure robust sample integrity, while minimal, randomly distributed missing data were addressed through multiple imputations, thereby maintaining statistical power and accuracy (Hair et al., 2018; Pallant, 2020).

4.3. Sample Characteristics and Demographic

4.3.1. Gender

Regarding gender distribution, most respondents were female, making up 82% of the sample. Males accounted for 17%, while 1% identified as non-binary or third gender. Another 1% chose not to disclose their gender. These results are illustrated in Figure 2: Gender.

Figure 2: Gender

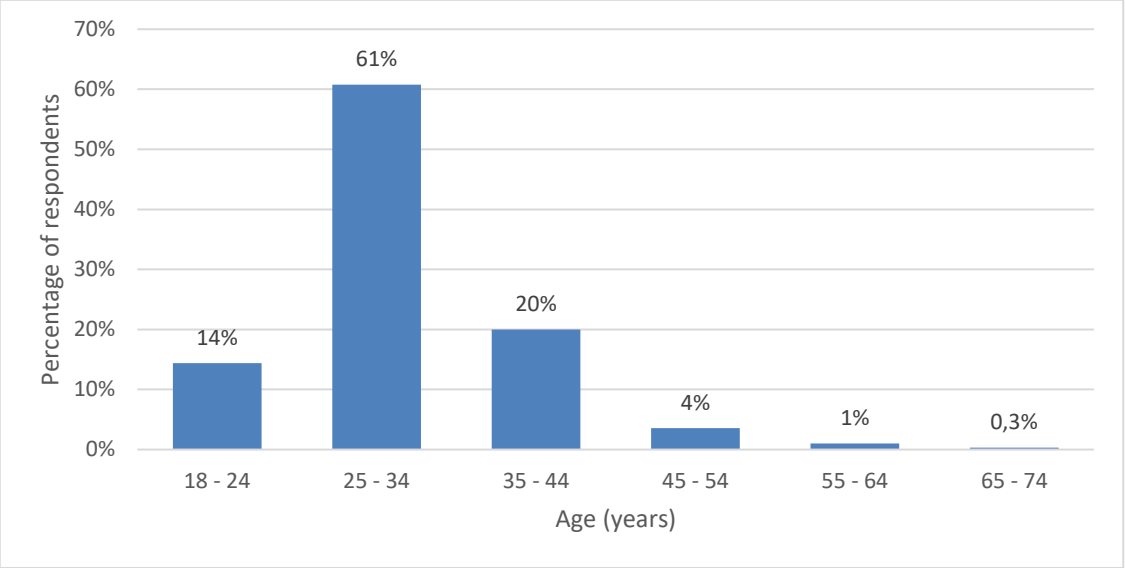


Source: Author's interpretation based on survey data.

4.3.2. Age

Figure 3 illustrates that the most significant respondents (61%) were aged between 25 and 34. Those followed this in the 35 to 44 age range who comprised 20% of the respondents. A smaller percentage, 14%, were aged between 18 and 24, while only 4% fell within the 45 to 54 age category. Very few respondents, just 1%, were aged 55 or older.

Figure 3: Age

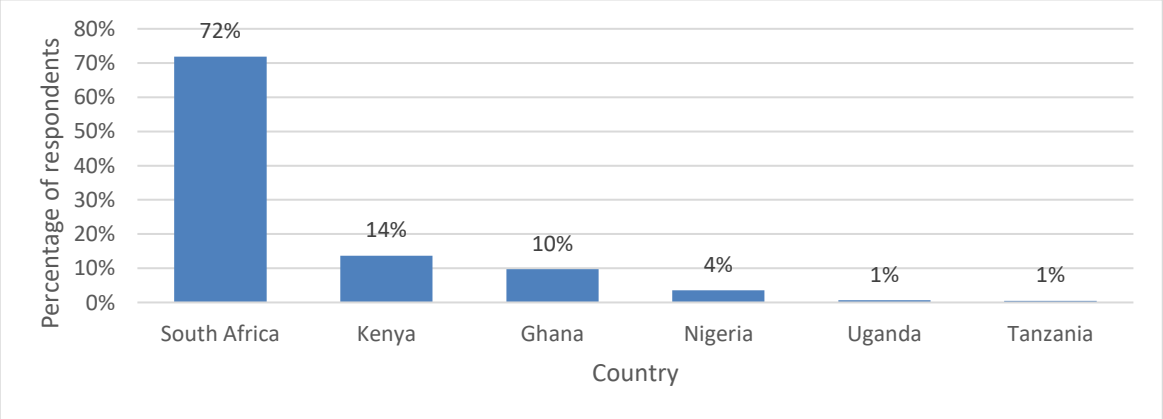


Source: Author's interpretation based on survey data.

4.3.3. Country

In terms of geographical distribution, the data shown in Figure 4 indicates that the majority of respondents were from South Africa (72%), followed by Kenya (14%), Ghana (10%), Nigeria (4%), Uganda (1%), and Tanzania (1%).

Figure 4: Country



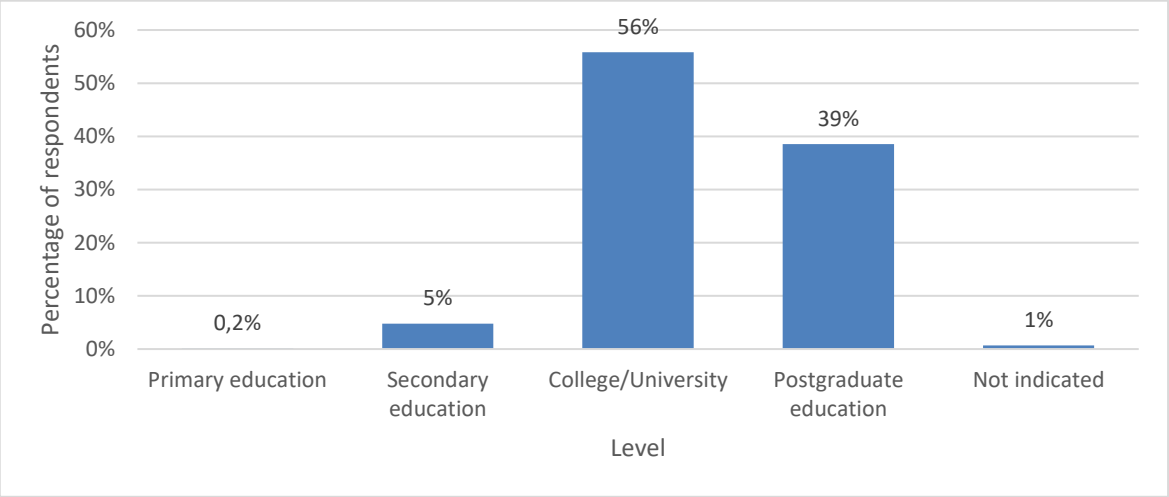
Source: Author's interpretation based on survey data.

4.3.4. Level of education

The educational background of the respondents revealed that over half (56%) had obtained a college or university degree, while 39% had completed postgraduate studies. A small percentage (5%) had only finished secondary

education, and 0.2% reported having completed only primary education. Additionally, 1% of the respondents did not specify their educational background. The results are illustrated in Figure 5.

Figure 5: Level of education

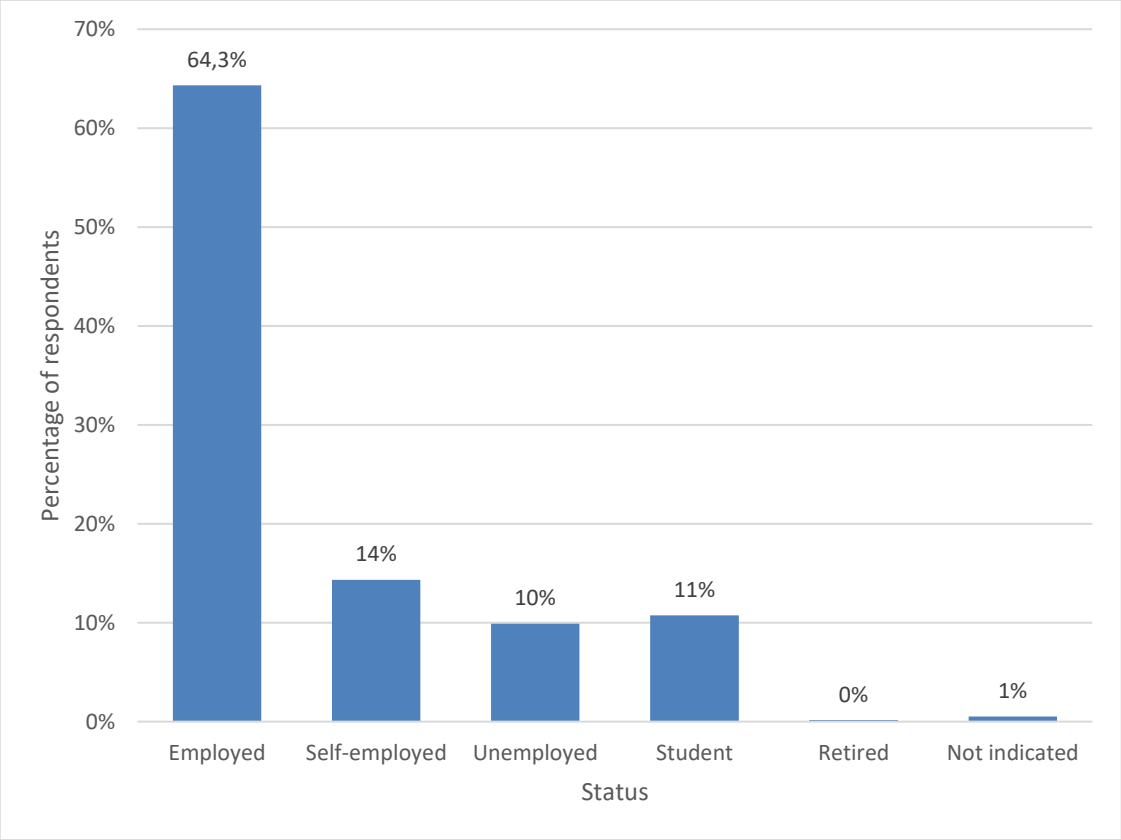


Source: Author's interpretation based on survey data.

4.3.5. Employment status

Employment status varied among respondents, with the majority (64%) employed. Another 14% were self-employed, while 10% were unemployed. Students made up 11% of the sample. Similar to education level, 1% did not indicate their employment status.

Figure 6: Employment Status



Source: Author's interpretation based on survey data.

The demographic profile of the sample suggests that the study predominantly captured responses from young to middle-aged adults, particularly females, with higher education levels and formal employment. The results are also summarised in Table 1.

4.3.6. Segmentation and Adoption Trends

Beyond overall demographic distribution, the adoption of DFS varied across socio-demographic groups. Younger respondents aged between 25–34 years, who formed the largest segment of the sample, reported higher adoption levels, reflecting their greater digital literacy and readiness to embrace mobile-based financial services and DFS in general. Female respondents, who represented 82% of the sample, also demonstrated strong engagement with DFS, consistent with regional studies showing that mobile money platforms have reduced gender gaps in financial access (GSMA, 2023).

Educational attainment and employment status influenced adoption patterns. Respondents with tertiary or postgraduate education were more likely to use advanced DFS features such as credit, insurance, and savings, while those with only secondary education primarily engaged with basic money transfers and payments. Similarly, formally employed and self-employed individuals showed higher adoption intensity than unemployed respondents and students, reflecting income-linked differences in financial product usage.

Geographically, although the dataset was dominated by urban respondents (particularly from South Africa, 72%), secondary evidence consistently demonstrates that rural populations face lower adoption rates due to weaker infrastructure, patchy network coverage, and limited agent networks (World Bank, 2022; GSMA, 2023). This rural–urban gap reinforces the importance of policy and infrastructure investments to expand equitable access.

4.4. Validity

4.4.1. Methodological Justification

Construct validity was assessed through Exploratory Factor Analysis (EFA) using Principal Axis Factoring (PAF) and Promax rotation. PAF was chosen because it isolates common variance among variables, making it particularly suitable for identifying latent constructs in theory-driven research. In contrast, Principal Component Analysis incorporates total variance (common and unique) without differentiation (Hair et al., 2018; Tabachnick & Fidell, 2019).

Promax rotation was selected due to its capacity to accommodate correlated factors, aligning with theoretical assumptions inherent to the UTAUT2 model used in this study. This oblique rotation method enhances factor interpretability in social sciences research where theoretical constructs are naturally interrelated (Field, 2018; Hair et al., 2018).

4.4.2. Statistical Validation of Methodological Decisions

Two essential preliminary assessments support the validity of these methods:

- The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy shows a KMO value of 0.919, indicating excellent sampling adequacy and suggesting that factor analysis is appropriate for the dataset (Hair et al., 2018).
- Bartlett's Test of Sphericity yielded statistically significant results (χ^2 = 6234.348, df = 210, $p < 0.001$), confirming that there are sufficient correlations among the variables, which makes factor extraction relevant (Pallant, 2020).

4.4.3. Factor Extraction and Interpretation

The initial eigenvalues indicated five factors with eigenvalues greater than 1, collectively explaining 66.60% of the total variance. This substantial proportion confirms a strong underlying factor structure, validating the extraction method choice (PAF). These factors reflect meaningful theoretical dimensions of DFS adoption by isolating common variance.

Factor 1: DFS Usage and Adoption Intention

This factor measures ongoing engagement, habitual use, the likelihood of recommending Digital Financial Services (DFS), and the perceived improvement in access to financial resources.

Factor 2: Perceived Benefits of DFS

This factor reflects users' perceived financial advantages, including easier financial management, better access to credit, and increased savings.

Factor 3: Service Quality and Trust

This factor indicates user satisfaction regarding the efficiency of services, the trustworthiness of security measures, and confidence in transactions.

Factor 4: Social Influence

This factor highlights the societal and peer pressures that drive the adoption of DFS, emphasising the critical role that influential individuals play in this behaviour.

Factor 5: Ease of Use

This factor emphasises the importance of simplicity, clarity, and user-friendliness of the system as essential elements contributing to the adoption of DFS.

These empirically derived factors were identified through the Promax rotation (allowing correlations among them), thus reinforcing the theoretical alignment and methodological choices made.

The selected methodological approach—principal Axis Factoring combined with Promax rotation—is robustly supported by statistical outcomes. KMO and Bartlett's sphericity tests confirm factor analysis suitability, while eigenvalues and variance explained provide evidence of explicit, theoretically coherent latent constructs. This rigorous validation ensures strong construct validity, reinforcing the reliability and theoretical clarity of the subsequent analyses (Field, 2018; Hair et al., 2018; Tabachnick & Fidell, 2019; Pallant, 2020).

Table 1: KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.919
Bartlett's Test of Sphericity	Approx. Chi-Square	6234.348
	df	210
	Sig.	.000

Source: Author's interpretation based on survey data.

The initial eigenvalues indicate that five factors had eigenvalues greater than 1, suggesting they explain a significant portion of the variance in the dataset. These factors accounted for 66.60% of the variance in the initial items, demonstrating a strong factor structure.

Table 2: Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	8.103	38.586	38.586	7.690	36.619	36.619	6.024
2	2.346	11.170	49.756	1.912	9.103	45.723	5.542
3	1.248	5.944	55.699	.930	4.430	50.153	5.728
4	1.217	5.794	61.494	.809	3.853	54.006	3.329
5	1.072	5.107	66.601	.670	3.192	57.198	4.000
6	.785	3.739	70.340				
7	.759	3.612	73.952				
8	.572	2.726	76.679				
9	.528	2.515	79.194				
10	.504	2.402	81.596				
11	.473	2.255	83.851				
12	.452	2.155	86.005				
13	.426	2.027	88.032				
14	.416	1.982	90.015				
15	.394	1.876	91.890				
16	.371	1.767	93.657				
17	.312	1.485	95.142				
18	.281	1.339	96.482				
19	.258	1.229	97.711				
20	.253	1.202	98.913				
21	.228	1.087	100.000				
Extraction Method: Principal Axis Factoring.							

Source: Author's interpretation based on survey data.

The five distinct constructs identified were DFS Usage and Adoption Intention, capturing continued engagement with DFS, emphasising habitual use, recommendation to others, and perceived benefits in financial access. The perceived benefits of the DFS construct reflect the financial advantages users associate with DFS, including improved access to credit, financial management, and savings. Factor 3 was Service Quality and Trust, highlighting users' satisfaction with DFS providers, trust in security measures, and confidence in transactions. The fourth factor was Social Influence, underscoring the role of societal and peer pressure in DFS adoption, suggesting that endorsements from influential individuals impact user behaviour. The fifth factor was Ease of Use, signifying the importance of system simplicity, indicating that clarity and ease of learning contribute to adoption. The composition is presented in the Pattern Matrix in Table 4.

Table 3: Pattern Matrix

Construct	Item	Factor				
		1	2	3	4	5
DFS Usage and Adoption Intention	Q18 I plan to continue using Digital Financial Solutions in the future.	.876				
	Q16 Using Digital Financial Solutions is now part of my routine.	.840				
	Q17 I use Digital Financial Solutions without having to think much about it.	.810				
	Q19 I will recommend Digital Financial Solutions to others.	.730				
	Q20 How often do you use Digital Financial Solutions?	.563				
	Q22 Digital Financial Solutions have improved my access to financial services.	.530				
	Q11 I enjoy using Digital Financial Solutions.	.508				
Perceived Benefits of DFS	Q29 Digital Financial Solutions give me better access to credit.		.774			
	Q27 Digital Financial Solutions make managing my finances easier.		.713			
	Q28 Digital Financial Solutions help me save more money.		.682			
	Q35 Using Digital Financial Solutions has increased my understanding of finances.		.626			
	Q23 I now use more financial products (e.g., savings accounts, loans) because of Digital Financial Solutions.		.543			
Service Quality and Trust	Q32 I am satisfied with the customer service provided by Digital Financial Solutions providers.			.918		
	Q33 It is easy to resolve problems with Digital Financial Solutions providers.			.847		
	Q31 Digital Financial Solutions providers handle transactions efficiently.			.684		
	Q34 I feel confident using Digital Financial Solutions for my financial transactions.			.489		
	Q30 I trust Digital Financial Solutions to keep my financial information secure.			.458		
Social Influence	Q7 People who matter to me think I should use Digital Financial Solutions.				.849	
	Q8 People whose opinions I respect prefer that I use Digital Financial Solutions.				.769	
Ease of Use	Q6 I find Digital Financial Solutions clear and straightforward to use.					.824
	Q5 It is easy for me to learn how to use Digital Financial Solutions.					.757
	Extraction Method: Principal Axis Factoring. Rotation Method: Promax with Kaiser Normalization.					
	a. Rotation converged in 7 iterations.					

4.5. Reliability

A reliability analysis was performed using Cronbach's Alpha; the results are presented in Table 5. The findings indicate substantial internal consistency across all constructs, as all Cronbach's Alpha values exceeded the minimum required threshold of 0.7. This includes the constructs of DFS usage and adoption intention. (α = .872), Perceived Benefits of DFS (α = .813), Service Quality and Trust (α = .850), Social Influence (α = .836), and Ease of Use (α = .743).

Since all five constructs were valid and reliable, a composite scale could be computed for each construct by computing the average of items retained within each construct.

Construct	N of Items	Cronbach's Alpha
DFS Usage and Adoption Intention	7	.872
Perceived Benefits of DFS	5	.813
Service Quality and Trust	5	.850
Social Influence	2	.836
Ease of Use	2	.743

Source: Author's interpretation based on survey data.

4.6. Descriptive Analysis of UTAUT2 Constructs and Correlations

The descriptive statistics showed that Ease of Use (mean = 5.32±0.650) was the highest-rated construct, followed by DFS Usage and Adoption Intention (mean = 5.30±0.554). The lowest-rated constructs were Perceived Benefits of DFS (mean = 4.93±0.832) and 2. Service Quality and Trust (mean = 4.93±0.748).

The correlation analysis shows significant positive relationships among all constructs, indicating strong interconnections in adopting Digital Financial Solutions (DFS). Both DFS Usage and Adoption Intention were positively and significantly correlated with each of the Perceived Benefits of DFS.(r = 0.453, p-

value < 0.001), Service Quality and Trust (r = 0.479, p-value < 0.001), Social Influence (r = 0.472, p-value < 0.001), and Ease of Use (r = 0.444, p-value < 0.001). This is because the correlation coefficients were positive. The p-values were less than 0.01 < 0.05.

Table 4: Descriptive Statistics and Pearson Correlation

	Descriptive Statistics		Pearson Correlation				
Construct	Mean	SD	1.	2.	3.	4.	5.
1.Perceived Benefits of DFS	4.93	.832	1				
2.Service Quality and Trust	4.93	.748	.653**	1			
3.Social Influence	5.01	.920	.349**	.397**	1		
4.Ease of Use	5.32	.650	.368**	.403**	.313**	1	
5.DFS Usage and Adoption Intention	5.30	.554	.453**	.479**	.472**	.444**	1

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Author's interpretation based on survey data.

4.7. Hypothesis testing using regression

A regression model was fitted with DFS Usage and Adoption Intention as the dependent variable. The independent variables were ease of Use, Social Influence, Perceived Benefits of DFS, and Service Quality and Trust. These results were used to test the hypotheses.

4.7.1. Regression Assumptions Diagnostics

a. Test for Linearity

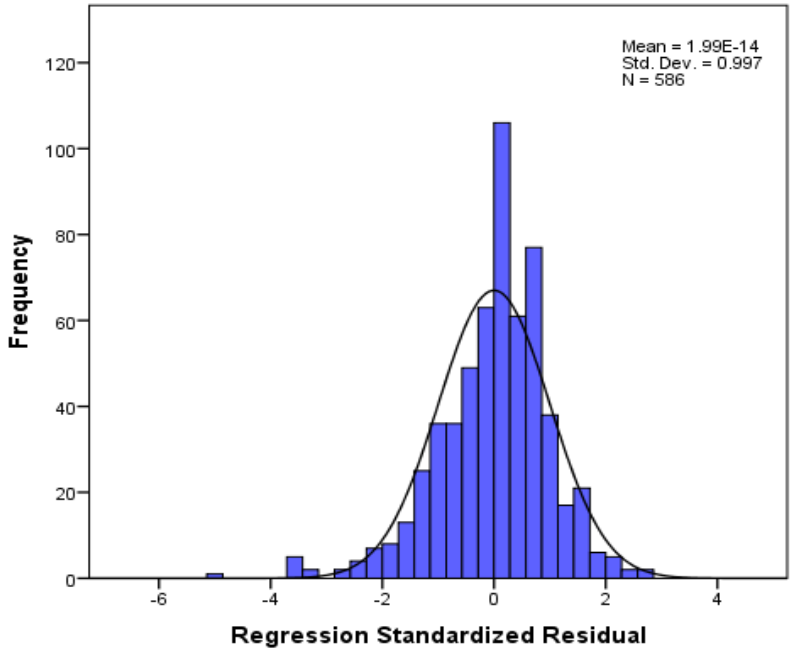
The correlations between DFS Usage and Adoption Intention and the Perceived Benefits of DFS, Service Quality and Trust, Social Influence, and Ease of Use were positive and none zero. This proves there was linearity; thus, the linearity assumption was met.

b. Test for Normality

The histogram of standardised residuals in Figure 7 shows that most bards fell below the standard curve. This indicates that the residuals were either

customarily distributed or approached the normal distribution. Thus, the normality of the residual assumption was also met.

Figure 7: Histogram of regression residuals



Source: Author's interpretation based on survey data.

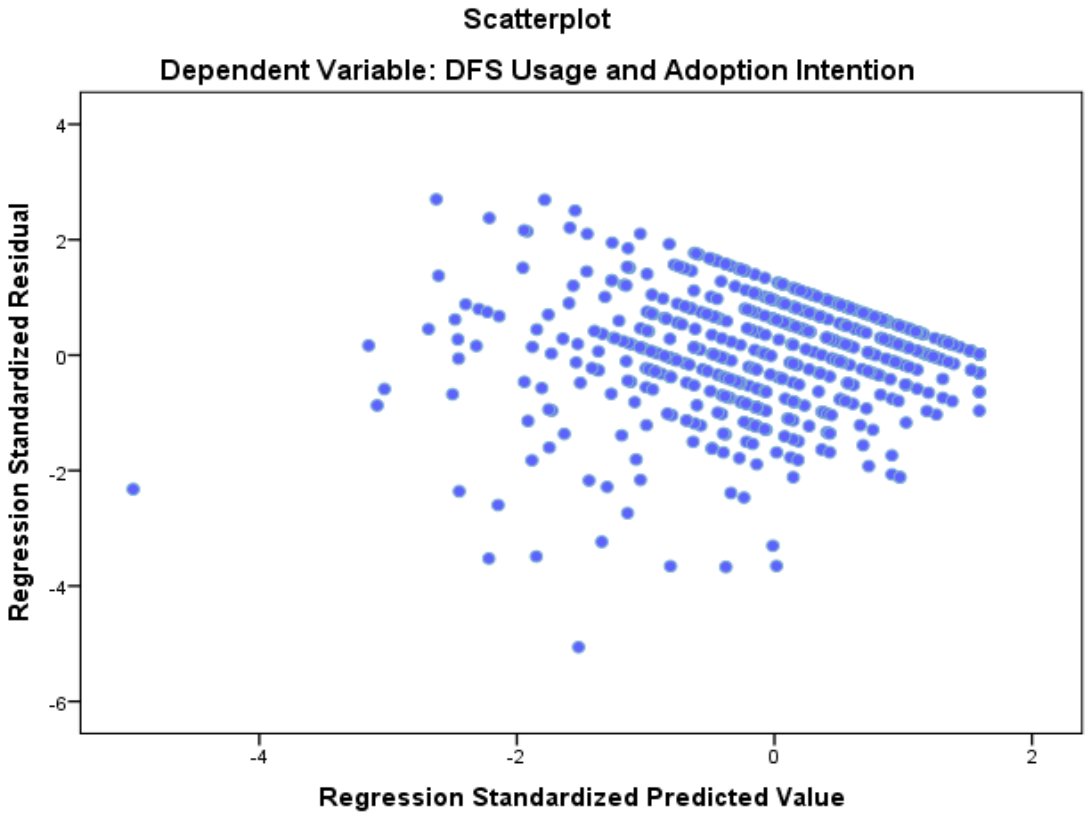
c. Test for NO Multicollinearity

The variance in inflation factors (VIF) values shown in Table 8 show that all values were below 10, above which multicollinearity would be a threat. This, the no multicollinearity assumption, was also met.

d. Test for Homoscedastic

The scatter plot of standardised residuals against the scandalised predicted values showed dots scattered around the zero value with no pattern. This indicates that the homoscedasticity assumption was also met.

Figure 8: Scatter plot of residuals



Source: Author's interpretation based on survey data.

e. Test for Independent errors

A Durbin-Watson statistic of 2.130 falls within the acceptable range (close to 2), suggesting no significant autocorrelation in the residuals, thus ensuring the reliability of the model's predictions since the residuals were independent. Therefore, all the regression assumptions were met. This indicates that the regression results were reliable.

4.7.2. Regression results

The regression model explains 38.7% of the variance in DFS Usage and Adoption Intention (R^2 = .387), indicating that Ease of Use, Social Influence, Perceived benefits of DFS, Service Quality, and Trust collectively influence users' intention to adopt and continue using Digital Financial Solutions.

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.622[a]	.387	.382	.43562	2.130
a. Predictors: (Constant), Ease of Use, Social Influence, Perceived Benefits of DFS, Service Quality and Trust					
b. Dependent Variable: DFS Usage and Adoption Intention					

Source: Author's interpretation based on survey data.

The ANOVA table for the regression model indicates that the model is statistically significant ($F(4, 581) = 91.588$, $p < 0.001$), meaning that Ease of Use, Social Influence, Perceived Benefits of DFS, and Service Quality and Trust together significantly predict DFS Usage and Adoption Intention.

Table 6: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	69.522	4	17.380	91.588	.000[b]
	Residual	110.255	581	.190		
	Total	179.777	585			
a. Dependent Variable: DFS Usage and Adoption Intention						
b. Predictors: (Constant), Ease of Use, Social Influence, Perceived Benefits of DFS, Service Quality and Trust						

Source: Author's interpretation based on survey data.

The regression coefficients presented in Table 9 were used to answer the hypotheses. These are detailed below.

Table 7: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2.273	.167		13.603	.000		

	Perceived Benefits of DFS	.106	.029	.159	3.653	.000	.555	1.803
	Service Quality and Trust	.128	.033	.172	3.833	.000	.521	1.918
	Social Influence	.166	.022	.276	7.633	.000	.805	1.242
	Ease of Use	.195	.031	.229	6.289	.000	.796	1.256
a. Dependent Variable: DFS Usage and Adoption Intention								

Source: Author's interpretation based on survey data.

Results of Hypothesis 1: Perceived Benefits of DFS

The perceived benefits of these services influence the intention of Digital Financial Services (DFS) to adopt them. The results indicate a coefficient (β) of 0.159, a t-value of 3.653, and a p-value of $p < 0.001$. This confirms that perceived benefits are a significant factor in determining users' intention to adopt DFS. In particular, a 1% improvement in the perceived benefits leads to a 0.106% increase in the intention to use DFS.

Results about Hypothesis 2: Ease of Use

Ease of Use positively affected adoption intention ($\beta = 0.229$, $t = 6.289$, $p < 0.001$). This supports the hypothesis that ease of use is an important factor influencing users' intention to adopt DFS. Specifically, a 1% improvement in Ease of Use is associated with an increase in DFS Usage and Adoption Intention of approximately 0.195%.

Results of Hypothesis 3: Social Influence

Adoption intention was significantly affected by Social Influence ($\beta = 0.276$, $t = 7.633$, $p < 0.001$). This supports the hypothesis that social influences and reference groups are important in shaping adoption intention. In particular, a 1% increase in Social Influence leads to an increase in DFS Usage and Adoption Intention of approximately 0.166%.

Results of Hypothesis 4: Service Quality and Trust

Service Quality and Trust were significant predictors of adoption intention ($\beta = 0.172$, $t = 3.833$, $p < 0.001$), supporting the hypothesis that trust and perceived

quality influence adoption intentions. Specifically, a 1% improvement in Service Quality and Trust is associated with an increase in DFS Usage and Adoption Intention of approximately 0.128%.

Hypotheses on Cost-effectiveness and Enjoyment

These hypotheses regarding Cost-effectiveness and Enjoyment were not tested in this study because of problems with construct validity and reliability uncovered during the exploratory factor analysis. The items developed to measure these constructs did not meet the required statistical criteria as indicated by low factor loadings and low Cronbach's alpha, thus making them not fit for further analysis. Consequently, these constructs were dropped to ensure the overall strength and quality of the regression model. Future studies may also seek to improve these gaps by developing new and more effective measurement items or employing other existing and proven scales to measure these constructs.

Results per country

The results from Kenya, Ghana, and South Africa showed that the effect of using and adopting Digital Financial Services (DFS) was not the same. In Kenya, the most potent positive effect was observed for social influence ($\beta = 0.476$, $p = 0.000$), followed by perceived benefits ($\beta = 0.211$, $p = 0.037$) and service quality and ease of use were not significant. On the contrary, only service quality and trust ($\beta = 0.321$, $p = 0.028$) were found to be significant in Ghana. However, social influence ($\beta = 0.207$, $p = 0.093$), perceived benefits ($\beta = 0.169$, $p = 0.186$), and ease of use ($\beta = 0.239$, $p = 0.074$) had less effect as indicated by p-values greater than 0.05. In South Africa, all four factors, including ease of use ($\beta = 0.259$, $p = 0.000$), service quality and trust ($\beta = 0.216$, $p = 0.000$), social influence ($\beta = 0.206$, $p = 0.000$), and perceived benefits ($\beta = 0.131$, $p = 0.015$) were found to be significant.

Table 8: Regression Results across countries

	Country							
	Kenya		**Ghana**		**South Africa**		**Total**	
n	80		57		421		586	
R-Square	.542		.593		.363		.387	
ANOVA (P-value)	.000		.000		.000		.000	
Regression Weights	Beta	Sig.	Beta	Sig.	Beta	Sig.	Beta	Sig.
Perceived Benefits of DFS	.211	.037	.169	.186	.131	.015	.159	.000
Service Quality and Trust	.151	.133	.321	.028	.216	.000	.172	.000
Social Influence	.476	.000	.207	.093	.206	.000	.276	.000
Ease of Use	.081	.337	.239	.074	.259	.000	.229	.000

Source: Author's interpretation based on survey data.

4.8. Conclusion

The analysis in Chapter 4 examines how Sub-Saharan African countries accept and use Digital Financial Services (DFS) through an expanded UTAUT2 framework. The research shows that DFS behavioural intentions and utilisation depend on performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value and habit. The research confirms that DFS adoption is essential for financial inclusion because it enhances financial service accessibility, product variety, and usage frequency for previously excluded populations.

The research identifies several ongoing obstacles which restrict DFS adoption throughout Sub-Saharan Africa. The main obstacles to digital financial solution adoption stem from perceived digital risks, substantial security issues, inadequate infrastructure, restricted digital literacy, and complex regulatory systems. The difficulty level with these obstacles differs among the studied nations because of their varying economic standing and infrastructure development. The region can achieve DFS's maximum potential through coordinated regulatory support, infrastructure investment, digital literacy education, and improved cybersecurity measures.

The enhanced UTAUT2 framework stands as a powerful analytical instrument for studying DFS adoption in Sub-Saharan Africa, according to Chapter 4, because

it includes region-specific barriers. The research findings present important recommendations for policymakers, financial institutions, technology providers, and international stakeholders who want to use digital innovation to enhance financial inclusion. The research findings create a strong base for developing effective policies and implementing strategic plans that promote financial inclusion and sustainable economic development in Sub-Saharan Africa.

CHAPTER 5: DISCUSSION OF FINDINGS

This chapter analyses and contextualises the results discussed in Chapter 4. The demographic analysis indicates that the sample mainly consists of young adults (ages 25-34), with a majority being female, and is primarily located in South Africa, along with additional participants from Kenya, Ghana, and Nigeria. These demographic observations correspond with existing research that emphasises the involvement of younger, tech-savvy individuals in Digital Financial Solutions.

The exploratory factor analysis confirmed the robustness and relevance of the factors identified: DFS Usage and Adoption Intention, Perceived Benefits of DFS, Service Quality and Trust, Social Influence, and Ease of Use. Each factor is deeply analysed and explicitly connected to prior empirical studies that underline their significance within the enhanced UTAUT2 framework (Hair et al., 2018; Field, 2018).

The multiple regression analysis offered significant empirical validation of the hypothesised relationships. The analysis confirmed substantial effects of Perceived Benefits, Ease of Use, Social Influence, and Service Quality and Trust on DFS usage and adoption intentions. This aligns with previous literature highlighting these factors' critical roles in technology adoption and financial service utilisation (Cohen et al., 2013; Kamara & Yu, 2024).

The country-specific analysis underscores significant differences and similarities, as discussed later. Consistent with Kamara and Yu (2024), the results revealed country-specific variations in DFS adoption. For instance, in Kenya, the prominence of social influence mirrors Kamara and Yu’s finding that digital financial solutions enhance accessibility through social and community-driven adoption patterns.

- **Kenya** exhibited a predominant influence from Social Influence, emphasising community and social factors.
- **Ghana** strongly relied on Service Quality and Trust, indicating a market where reliability and trustworthiness significantly impact DFS adoption.

- **South Africa** showed significance across all tested factors, reflecting a more mature DFS market.

These country-specific insights align with existing literature on financial inclusion and technology acceptance in emerging economies (Alalwan et al., 2017; Centellegher et al., 2018).

5.1. Hypothesis 1: Perceived Benefits positively influence DFS adoption intention.

The results strongly supported Hypothesis 1 ($\beta = 0.159$, $p < 0.001$), showing that perceived benefits significantly enhance users' intention to adopt Digital Financial Solutions (DFS). This finding aligns closely with previous research by Kamara and Yu (2024), which indicated that perceived financial advantages, such as improved access to credit and enhanced financial management capabilities, are strong motivators for DFS adoption. Similarly, Cele and Mlitwa (2024) discovered that communicated financial benefits significantly increase adoption rates among potential DFS users. The consistency of these findings underscores that economic incentives and tangible financial outcomes are key factors influencing technology adoption decisions in Sub-Saharan Africa. This reflects the regional socio-economic context, where financial services are often limited and traditional options inadequate.

5.1.1. Kenya

M-Pesa's extensive use can be attributed to its clear advantages, such as affordable transfers, payment of bills, and the ability to save and borrow—especially among those in rural areas and unbanked individuals (UNDP, 2024; Bawuah, 2024). The smooth incorporation of M-Pesa into everyday economic activities has established digital financial services (DFS) as a necessity rather than just an optional feature. This perspective aligns with Kamara and Yu (2024), who highlight that Kenya's social and financial frameworks support inclusive technology-driven service provision. The supportive regulatory landscape has also played a key role in enhancing these advantages (GSMA, 2024).

5.1.2. Ghana

Perceived advantages, such as faster transactions and less dependence on conventional banks, have driven digital financial services (DFS) uptake, particularly in rural regions (Appiah & Agblewornu, 2025). In contrast to Kenya, where economic need is a primary factor, the adoption in Ghana is more significantly shaped by service efficiency. Nevertheless, these benefits are often tempered by inconsistencies in infrastructure and varying levels of trust in the platforms.

5.1.3. South Africa

The advantages recognised in South Africa encompass more than just access; they also involve cashback incentives, mobile loan services, and extensive account oversight (GSMA, 2023). These observations build on the research by Isiaku et al. (2024), which highlighted that in more digitally advanced markets, the perception of benefits relies on improved value-added features rather than merely basic access.

5.2. Hypothesis 2: Ease of Use positively influences DFS adoption intention.

Ease of use emerged as a highly influential factor, strongly supporting Hypothesis 2 ($\beta = 0.229$, $p < 0.001$). These findings corroborate previous research by Venkatesh et al. (2012) and Gosavi (2018), underscoring the essential role of user-friendly technology interfaces and intuitive navigation systems in technology adoption. Within the Sub-Saharan African context, where digital literacy varies significantly, ease of use becomes critically important. Complex interfaces and procedures often serve as substantial barriers, especially among rural populations and less digitally adept individuals. Thus, these results emphasise the importance of user-centric design principles, simplicity, and accessibility in promoting higher DFS adoption rates and enhancing overall financial inclusion.

5.2.1. Kenya

In Kenya, M-Pesa's structure centred around SMS commands and support from agents during onboarding has ensured that it is accessible to even those with low literacy levels and older individuals (Suri & Jack, 2016). The user-friendly aspect of the service has been crucial in encouraging first-time users, which generates ongoing engagement.

5.2.2. Ghana

Appiah and Agblewornu (2025) highlighted that platforms providing smooth navigation and support in native languages enhanced user adoption. Kelly and Palaniappan (2023) noted that users expressed higher satisfaction when the straightforward transaction process and the instructions were culturally relevant.

5.2.3. South Africa

Although South Africa has a relatively tech-savvy population, Isiaku et al. (2024) found that complex interfaces discourage engagement. Features like biometric login and one-tap payments have improved retention. This suggests that even in developed DFS markets, simplicity can reduce friction in daily transactions and boost habitual usage.

5.2.4. Nigeria

Although sufficient data was not collected in Nigeria to test the hypothesis, research indicates that perceived advantages have fuelled adoption, especially among underbanked urban populations. Digital Financial Services (DFS) platforms like Opay and Paga provide fast mobile transfers, bill payments, airtime purchases, and merchant transactions, facilitating daily financial activities (EFInA, 2023). The competitive landscape of fintech further motivates users by offering incentives such as promotional rewards and referral bonuses. However, varying levels of trust in regulatory enforcement slightly temper this benefit-driven adoption (IMF, 2023).

5.3. Hypothesis 3: Social Influence significantly impacts DFS adoption intention.

Social Influence emerged as the strongest predictor of DFS adoption intention ($\beta = 0.276$, $p < 0.001$), corroborating findings by Alalwan et al. (2017) and Demirgüç-Kunt et al. (2017). The influential role of social networks and community endorsements in adoption decisions is particularly pronounced in communal societies prevalent across Sub-Saharan Africa. Peer recommendations and societal approval effectively mitigate uncertainties associated with new financial technologies, making social networks critical in adoption strategies and policy formulations to improve financial inclusion.

5.3.1. Kenya

Suri and Jack (2016) credited the expansion of M-Pesa to robust social diffusion. What began as a remittance service evolved through recommendations from peers and family members. Our results support this, showing that widespread adoption within the community in Kenya fosters momentum, making it harder to opt out than to opt in.

5.3.2. Ghana

Social proof significantly affects the adoption of DFS. According to Kelly and Palaniappan (2023), individuals are more inclined to use DFS when they see trusted service users. However, Appiah and Agblewornu (2025) observe that the impact of social networks can also lead to herd behaviour, where users participate without completely grasping the risks associated with the platform.

5.3.3. South Africa

While social influence exists, Hornuf et al. (2024) discovered that it is influenced by individualistic cultural values and increased digital autonomy. Recommendations from influencers on platforms like TikTok and Instagram proved to be more impactful than those from family members, emphasising the transition towards contemporary digital social signals.

5.3.4. Nigeria

The simplicity of use continues to be a crucial factor in Nigeria's adoption of digital financial services (DFS). Fintech companies have launched streamlined applications featuring user-friendly interfaces and support for local languages. Isiaku et al. (2024) discovered that platforms that minimised cognitive effort—by reducing the number of steps and user prompts—saw notably greater engagement from low-literate users in urban and peri-urban areas.

5.4. Hypothesis 4: Service Quality and Trust positively affect DFS adoption intention.

The results strongly corroborated this hypothesis ($\beta = 0.172$, $p < 0.001$), consistent with research from GSMA (2023) and Cele and Mlitwa (2024). These studies highlight trust as a fundamental element for adopting digital financial platforms, particularly in light of past experiences with financial instability and fraud in numerous African nations. This finding emphasises the significance of service dependability, secure transactions, and practical problem-solving processes, essential for enhancing user confidence and maintaining long-term engagement with digital financial services.

5.4.1. Kenya

Trust in M-Pesa’s transaction security and agent network deepened usage (Suri & Jack, 2016). Transparent fee structures and responsive customer service have reinforced this trust, contributing to its dominant market position.

5.4.2. Ghana

Ghana, which has traditionally struggled with financial trust issues, has experienced a rise in adopting digital financial services (DFS) due to better regulatory oversight and enhancements in service quality (Osabutey & Jackson, 2024). According to Appiah and Agblewornu (2025), users are more willing to adopt and suggest DFS platforms that provide effective customer engagement and support channels. Regulation improvements and the introduction of national consumer protection laws have also increased user trust.

5.4.3. South Africa

South Africa's mature financial sector demands high service standards, significantly enhancing trust and adoption of DFS platforms (GSMA, 2023). In South Africa, the expectation for seamless service is even higher. Isiaku et al. (2024) observed that DFS platforms with 24/7 support, instant dispute resolution, and encrypted transactions experience faster user growth. Centralised dispute resolution mechanisms have further increased trust in digital platforms.

5.5. Hypothesis 5: The enjoyment of using DFS significantly influences the intention to adopt these solutions, leading to regular engagement.

The hypothesis regarding enjoyment was not subjected to empirical testing because survey items lacked sufficient reliability and validity, as indicated by the exploratory factor analysis. This limitation is consistent with the issues that Osabutey and Jackson (2024) pointed out, who emphasised the challenges in clearly defining and measuring these constructs within Sub-Saharan African settings. Future studies should enhance measurement instruments and constructs to capture these aspects accurately.

5.6. Hypothesis 6: The perceived trade-off between DFS's benefits and monetary cost will significantly influence the behavioural intention to adopt it. Users considering DFS cost-effective are likelier to adopt and continue using these services.

Similarly, the hypothesis regarding cost-effectiveness was not subjected to empirical testing because the survey items lacked sufficient reliability and validity, as indicated by the exploratory factor analysis (EFA). This limitation is consistent with the issues that Osabutey and Jackson (2024) pointed out, who emphasised

the challenges in clearly defining and measuring these constructs within Sub-Saharan African settings. Future studies should enhance measurement instruments and constructs to capture these aspects accurately.

5.7. Theoretical Comparison of Adoption Frameworks

While this study uses the UTAUT2 model as its main framework, comparing it with TAM and financial inclusion indices reveals each model's strengths and weaknesses, and clarifies this study's theoretical and practical contributions.

5.7.1. Technology Acceptance Model (TAM)

The Technology Acceptance Model, introduced by Davis (1989), suggests that perceived usefulness and perceived ease of use are key factors influencing technology acceptance. These variables align with the results of this study, where perceived benefits and ease of use were found to play a significant role in DFS adoption. Recent research indicates that TAM's explanatory capacity may be more limited in regions like Sub-Saharan Africa, where additional factors such as communal norms, trust levels, and systemic barriers affect adoption (Danisan, 2025; Omoniwa, 2021). Therefore, while TAM offers a simplified framework, it does not fully address wider socio-cultural and institutional influences.

5.7.2. Unified Theory of Acceptance and Use of Technology (UTAUT/2)

UTAUT2 (Venkatesh et al., 2012) builds on TAM with added factors like social influence, facilitating conditions, hedonic motivation, price value, and habit, making it more applicable for studying DFS adoption in Sub-Saharan Africa, where social validation is a key predictor. However, UTAUT2 presumes stable infrastructure and regulation, overlooking barriers such as unreliable systems and security issues. Recent studies recommend including trust and risk in the model (Appiah & Agblewornu, 2025; Al-Sharafi et al., 2025). This dissertation addresses

this gap by integrating service quality, trust, and systemic barriers into an improved UTAUT2 framework.

5.7.3. Financial Inclusion Indices

Indices such as the World Bank's Global Findex and the IMF's Financial Access Survey evaluate financial inclusion using macro-level indicators of access, usage, and service quality (Demirgüç-Kunt et al., 2018). Although these indices are not behavioural models, they play a pivotal role in benchmarking regional disparities and monitoring systemic progress. Recent research has connected fintech adoption frameworks, such as UTAUT, to financial inclusion outcomes, emphasizing the influence of access barriers and digital divides on adoption trends in Sub-Saharan Africa (Odei-Appiah et al., 2022). This study adds to the existing literature by integrating micro-level behavioural analysis with macro-level inclusion metrics, illustrating how adoption drivers contribute to enhanced access, increased usage frequency, and broader product diversification.

5.7.4. Synthesis

This comparison highlights that, although TAM provides conceptual clarity, it does not adequately address the trust, social, and institutional factors identified in this study. UTAUT2 offer a more comprehensive behavioural framework, yet it must be adapted to account for systemic barriers and inclusion outcomes. Financial inclusion indices contextualise DFS adoption within broader development metrics, but they are limited in explaining user-level decision making. Drawing on recent comparative research that integrates UTAUT with environmental and cultural perspectives (Bouteraa, 2024), this dissertation proposes an enhanced UTAUT2 model designed to deepen theoretical understanding and provide actionable recommendations for policymakers and industry stakeholders in Sub-Saharan Africa.

5.8. Contextual Differences Among Countries

5.8.1. Kenya

In Kenya, social influence was the most dominant adoption factor, reflecting the historical successes of mobile financial platforms such as M-Pesa. Suri and Jack (2016) attributed M-Pesa's success mainly to peer influence and extensive social network effects, highlighting the power of social endorsements in technology adoption. The prominence of social influence in Kenya suggests that community-driven marketing and adoption strategies significantly outperform other adoption drivers, providing a template for other DFS providers.

5.8.2. *Ghana*

In Ghana, service quality and trust were the most impactful factors influencing DFS adoption. This reflects the historical context of Ghana’s financial industry, which has faced notable trust and reliability challenges (Osabutey & Jackson, 2024). Consequently, Ghanaian consumers prioritise dependable and secure financial services. DFS providers within Ghana must emphasise building robust trust and transparent service practices to drive sustained adoption and usage.

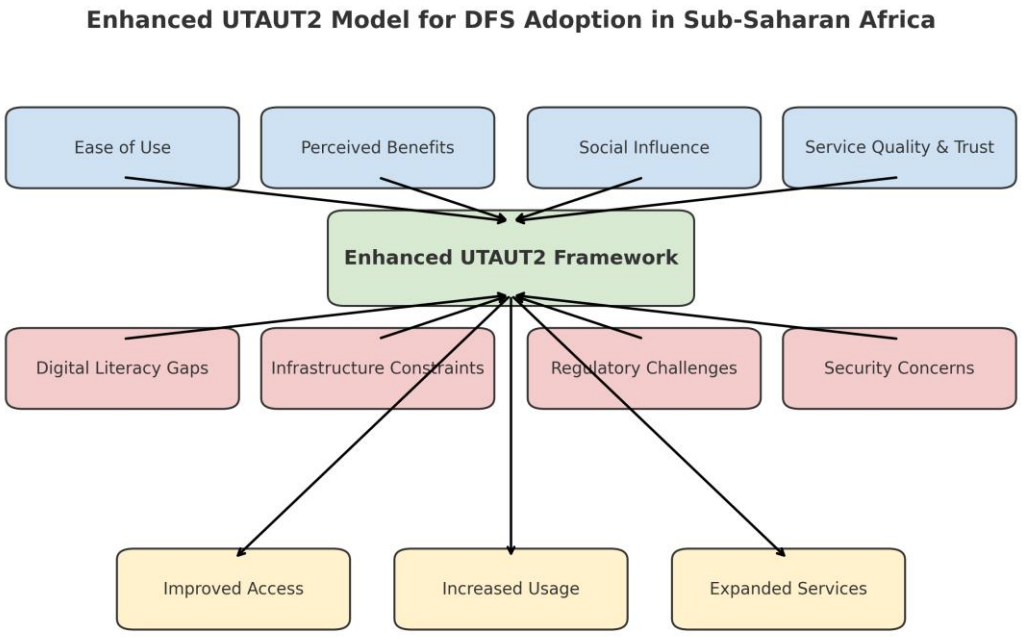
5.8.3. South Africa

South Africa exhibited a balanced significance across all studied constructs, demonstrating a mature DFS ecosystem with advanced infrastructure, widespread digital literacy, and greater financial market sophistication (GSMA, 2023). This balanced adoption profile highlights that comprehensive approaches addressing multiple adoption factors simultaneously are necessary within mature digital financial markets. Lessons learned from the South African context can provide valuable insights for countries striving to enhance DFS adoption comprehensively.

5.9. Consolidated Insights Framework

The previous sections discussed the impact of perceived benefits, ease of use, social influence, service quality, and trust on the adoption of Digital Financial Solutions in Sub-Saharan Africa. Country-specific differences were noted, with community influence being significant in Kenya, trust and reliability emphasized in Ghana, and a combination of adoption factors present in South Africa's mature market. These findings suggest it may be useful to introduce a consolidated framework that describes the drivers, barriers, and outcomes associated with DFS adoption in the region.

Figure 9: Consolidated Insights Framework



Source: Author's interpretation.

Figure 9 illustrates the Enhanced UTAUT2 Model for DFS Adoption in Sub-Saharan Africa, expanding on the foundational UTAUT2 framework by factoring in contextual obstacles and directly connecting adoption with measurable financial inclusion outcomes.

- Key Drivers of Adoption: The most influential motivators for embracing DFS are perceived benefits, user-friendliness, social influence, and the quality and trustworthiness of services, findings that are consistent with both the original UTAUT2 model and region-specific research.
- Barriers to Adoption: Adoption is hindered by challenges such as limited digital literacy, inadequate infrastructure, regulatory fragmentation, and persistent security risks. These factors particularly restrict usage among rural populations and vulnerable groups.
- Adoption Outcomes: The research confirms that DFS adoption leads to tangible advances in financial inclusion, including broader access to financial services, more frequent usage, and the expansion into advanced offerings like credit, savings, and insurance.

This enhanced framework differentiates itself from the classic UTAUT2 model in three significant ways: it positions trust and service quality as fundamental adoption drivers, addressing the prevalence of fraud and reliability concerns in the region; it explicitly incorporates structural barriers, which are often overlooked in the original model but are crucial in the Sub-Saharan African context; and it establishes a clear connection between DFS adoption and improved financial inclusion, underscoring the broader developmental impact beyond mere technological adoption.

By presenting adoption drivers, barriers, and outcomes together, this model delivers both academic and practical value. It not only enriches the understanding of user behaviour in emerging markets, but also serves as a strategic guide for policymakers, regulators, and financial service providers aiming to create more inclusive digital finance ecosystems.

Chapter 6: CONCLUSION, RECOMMENDATIONS, AND LIMITATIONS

6.1. Summary of the Study

This study sought to investigate the adoption of Digital Financial Solutions (DFS) and their impact on financial inclusion in Sub-Saharan Africa, specifically focusing on six countries: Kenya, Nigeria, Ghana, Uganda, Tanzania, and South Africa. Using the extended UTAUT2 framework, the study sought to determine the factors influencing behavioural intention and actual use of DFS, assess the role of DFS in advancing financial inclusion, and identify the barriers hindering wider adoption. The study drew on quantitative data from 586 valid respondents and used exploratory factor analysis and multiple regression techniques to assess the relationships between key variables.

The results showed that perceived benefits, ease of use, social influence, service quality, and trust significantly influence DFS adoption and usage. The research also demonstrated that DFS enhances financial inclusion by improving access to financial services, increasing the frequency of financial transactions, and expanding the range of available financial products.

6.2. Connecting Research Objectives to Findings

The study's four research objectives were directly addressed through rigorous empirical analysis:

6.2.1. Objective 1: *Determine the factors influencing behavioural intention to adopt DFS in Sub-Saharan Africa*

Identify the impact of performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, and price value on the behavioural intention to adopt DFS among different demographic groups in SSA.

***Objective 1 Finding*:**

The study's results indicated that perceived benefits, ease of use, social influence, and service quality and trust are significant factors that predict the intention to adopt digital financial services (DFS). These findings support the fundamental constructs of UTAUT2 and highlight their importance within the Sub-Saharan African context.

The regression analysis showed that perceived benefits (β = 0.159), ease of use (β = 0.229), social influence (β = 0.276), and service quality and trust (β = 0.172) were all statistically significant predictors of users' intention to adopt DFS. This suggests that individuals are more inclined to embrace DFS when they believe it is beneficial, user-friendly, supported by peers or community members, and offered by reliable platforms. These results were broadly consistent across various countries where the model was tested. However, there were some regional differences in the strength of these factors (for instance, social influence was particularly impactful in Kenya).

6.2.2. Objective 2: *Analyse the factors affecting the actual use behaviour of DFS.*

Examine how facilitating conditions, habits, and behavioural intention influence the actual use behaviour of DFS in SSA and assess how these factors contribute to sustained usage and integration into daily financial practices.

Objective 2 Finding

Conducive factors, habitual patterns, and intention to act affected actual use behaviour. Respondents' regular use of DFS demonstrates how these technologies have been incorporated into their everyday financial routines.

The actual engagement with DFS was associated with acts, enabling conditions, and habitual behaviour. Many respondents reported utilising DFS services routinely and instinctively, suggesting that these platforms have integrated into their daily financial activities. The factor analysis

revealed strong factor loadings for habitual usage and regular involvement, indicating that actual engagement with DFS is influenced by intention and supporting infrastructure and behavioural habits.

6.2.3. Objective 3: *Evaluate the impact of DFS adoption on financial inclusion.*

Measure the extent to which the adoption and use of DFS enhance financial inclusion in SSA, focusing on improvements in access to financial services, usage frequency, and the range of financial products utilised by previously unbanked or underbanked populations.

Objective 3 Finding

The research showed that adopting digital financial services (DFS) improves financial inclusion by broadening access, increasing usage frequency, and diversifying the range of financial products, especially among the previously unbanked or underbanked.

The empirical findings demonstrated that adopting DFS significantly improves financial inclusion. Survey participants noted better access to financial services, increased transaction frequency, and utilisation of a broader array of financial products, including mobile savings, microloans, and online payment services. For instance, descriptive analysis revealed a high average score (5.30) for the intention to use and adopt DFS, with over 65% of respondents recognising enhanced access to credit and savings options after adopting DFS.

6.2.4. Objective 4: *Identify barriers to the adoption and use of DFS.*

Identify the key barriers to adopting and using DFS in SSA, such as perceived risks, security concerns, infrastructural challenges, lack of digital literacy, and the regulatory landscape, and propose strategies to overcome these barriers to enhance financial inclusion.

Objective 4 Finding

These results underscore the need for tailored strategies addressing each country's unique challenges. The research revealed significant obstacles

to adopting DFS, such as perceived risks, concerns about security, challenges related to digital literacy, limitations in infrastructure, and inconsistencies in regulations.

The study pinpointed five primary barriers: perceived risks, security issues, infrastructural limitations, digital literacy challenges, and a variable regulatory landscape. These obstacles were shown to differ across the various countries examined. For example, digital literacy was highlighted as a significant issue in Uganda and rural Tanzania, whereas regulatory complexity was more evident in Nigeria and South Africa. These results underscore the necessity for tailored strategies that address the unique challenges faced by each country.

6.3. Theoretical Implications

The study contributes to the academic literature by validating and extending the UTAUT2 model in the context of DFS adoption in Sub-Saharan Africa. By integrating additional context-specific barriers into the framework, such as perceived risk, infrastructure, and regulation, the research offers a more comprehensive theoretical model for understanding technology adoption in emerging economies. These modifications enhance the model's applicability and explanatory power in digital inequality and socio-economic diversity settings.

6.4. Practical Implications and Recommendations

The practical implications derived from the study include explicit recommendations.

6.4.1. Considerations for Policymakers

The significant impact of regulatory frameworks in either promoting or obstructing the adoption of digital financial services was clearly illustrated in this research. According to Kamara and Yu (2024) and the IMF (2023), a fragmented and excessively stringent regulatory environment stifles innovation, particularly in developing DFS markets like Nigeria. Implementing harmonised and innovation-

friendly policies ensures that fintech companies can grow sustainably without jeopardising user safety. Additionally, gaps in infrastructure, especially in rural areas, continue to be a significant obstacle to accessing DFS platforms (GSMA, 2023; Cherie Blair Foundation, 2025). Policymakers are thus encouraged to focus on enhancing digital infrastructure and launching national digital literacy initiatives to mitigate exclusion caused by a lack of skills (World Bank, 2022). The insights from this study hold several significant practical implications pertinent to policymakers, financial institutions, and technology developers seeking to broaden the outreach and effectiveness of DFS throughout Sub-Saharan Africa.

They are urged to rectify regulatory inconsistencies and formulate more harmonised, innovation-supportive policies that enable DFS providers to scale sustainably while safeguarding consumers. In nations like Ghana and Nigeria, regulatory hurdles were identified as barriers to adoption, particularly in cases where licensing processes or compliance requirements are ambiguous or overly burdensome. Furthermore, government-backed investments in digital infrastructure, particularly in rural and underserved areas, can significantly enhance access to DFS platforms. The research also underscores the necessity for targeted digital literacy initiatives to bridge the knowledge gap for individuals excluded not due to a lack of technology but inadequate training or confidence.

This study identified key drivers and barriers to Digital Financial Services adoption in Sub-Saharan Africa but further practical guidance is needed for policymakers. Developing a digital inclusion policy roadmap and a tiered adoption model would help governments, regulators, and financial institutions coordinate efforts and tailor interventions based on users' digital maturity. While this research did not develop such frameworks, they are recommended for future study and policy work.

6.4.2. Strategy Implications for Financial Institutions

Service quality and trust were empirically validated as key predictors of DFS adoption, particularly in Ghana and South Africa (Appiah & Agblewornu, 2025; Cele & Mlitwa, 2024). Poor resolution mechanisms, language barriers, and non-transparent fees can erode consumer confidence in DFS. Financial institutions

must go beyond essential service delivery and embed user-centric trust features such as multilingual support, transparent pricing models, and quick, accessible customer service (Osabutey & Jackson, 2024). Partnerships with trusted local agents and cooperatives can increase reach and reliability—particularly in rural and low-income areas.

Financial institutions, particularly mobile money operators and retail banks are key to enhancing service quality and trust. The results show that trust was a defining factor in markets like Ghana, where past financial instability had eroded user confidence. Institutions should invest in multilingual customer service, strengthen complaint resolution mechanisms, and ensure transparent pricing to build and maintain customer trust. Involving local cooperatives or community-based organisations in service delivery also improves credibility and uptake.

6.4.3. Strategy Implications for Technology Providers

The simplicity of use emerged as one of the strongest and most consistent factors influencing the adoption of DFS across various nations, with particularly significant effects seen in South Africa and Nigeria. These results support previous studies by Venkatesh et al. (2012) and Hornuf et al. (2024) regarding the importance of user interface simplicity on technology uptake. Consistent with Gosavi (2018), who identified cognitive load as a hindrance for new users, developers are advised to create mobile-centric, low-bandwidth applications featuring straightforward navigation. Adding offline capabilities and biometric login options can significantly improve accessibility, especially in areas facing infrastructure difficulties. Furthermore, platforms incorporating ongoing user feedback into their agile development processes will likely achieve better retention and satisfaction (Sudianjaya, Kuswanto, & Nadlifatin, 2024).

Technology providers have a unique opportunity to eliminate usability obstacles. The ease of use has been recognised as a vital factor driving DFS adoption, particularly in South Africa and Nigeria. Developers should concentrate on creating user-friendly mobile-first platforms that accommodate low bandwidth. Streamlining the onboarding process with biometric authentication, offering

support in local languages, and designing for offline functionality where needed can all enhance accessibility. Consistent user testing and the inclusion of feedback will also aid in fostering long-term adoption.

Ultimately, collaboration among different sectors is crucial. Thriving DFS ecosystems are established through coordinated efforts that harmonise policy, infrastructure, product design, and user education. Public-private partnerships, initiatives backed by donors, and platforms for multi-stakeholder engagement are essential to ensure that DFS implementation is technologically advanced, socially inclusive, and sustainable.

6.5. Limitations and Future Research

This research significantly enhances our understanding of how Digital Financial Solutions are adopted in Sub-Saharan Africa, but it has certain limitations. These limitations establish a critical basis for future academic research.

Initially, the study utilised a cross-sectional design that collected data simultaneously. While this method provides a brief overview of user perceptions and behaviours, it fails to consider the temporal dynamics of adoption behaviour. Future inquiries would benefit from longitudinal studies that monitor DFS usage over time to investigate behavioural trends, habit formation, and shifts in user motivation.

Secondly, the research was confined to six sub-Saharan African countries; given data collection challenges, models were sufficiently applied to only three countries with sufficient accuracy. Although these nations embody diverse economic and technological contexts, they do not entirely capture the region's diversity. Expanding future research to include underrepresented countries, especially those with limited DFS infrastructure or different regulatory conditions, would improve the results' external validity and regional relevance.

Third, the dependence on self-reported, survey-derived data may lead to common method bias and socially desirable responses. Despite precautions

taken during the development of the instruments, future research should combine quantitative discoveries with objective usage statistics, interviews, or observational studies to strengthen methodological rigour.

Furthermore, the cost-effectiveness and hedonic motivation constructs were omitted from regression analysis due to concerns over reliability during exploratory factor analysis. Although their exclusion was methodologically justified, it creates a gap in the literature regarding user experience and value perception in DFS contexts. Future investigations should develop and validate culturally relevant measurement scales for these variables to better understand the motivational factors behind DFS adoption.

Lastly, this research primarily targeted behavioural intentions and usage. Future efforts should consider broader socio-economic outcomes such as enhancements in financial resilience, access to credit, or business advancement as long-term indicators of DFS impact. Such outcomes are essential for assessing DFS's transformative potential in tackling systemic financial exclusion.

6.6. Final Remarks

This research indicates that Digital Financial Solutions are convenient tools and significant facilitators of inclusive economic growth in Sub-Saharan Africa. When designed with care and implemented strategically, DFS can break down traditional obstacles to financial accessibility, especially for historically marginalised communities.

This study demonstrates that the uptake of DFS is complex and shaped by factors such as usability, social interactions, service quality, and perceived benefits. However, its effectiveness will hinge on how healthy stakeholders address users' unique challenges in various socio-economic and infrastructural contexts. Countries like Kenya and Ghana illustrate how local factors, including social cohesion, regulatory trust, and digital infrastructure, can lead to varied outcomes.

As Sub-Saharan Africa progresses on its digital transformation path, the DFS ecosystem must adapt to meet user expectations and requirements. The policy should shift from merely increasing adoption to empowering users, ensuring they have the tools, knowledge, and trust to engage fully in the digital economy.

This study provides a basis for researchers to further explore the convergence of technology and development. It delivers evidence-based recommendations for enhancing access and inclusivity for professionals and policymakers. The ongoing advancement and responsible expansion of DFS have the potential to unlock extraordinary opportunities, given that innovation is paired with empathy, fairness, and active involvement at every level.

In summary, achieving digital financial inclusion is not a final goal but an ongoing journey. It necessitates persistent dedication, adaptable policies, and a user-focused approach that prioritises the needs and circumstances of Sub-Saharan African users in financial innovation.

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7. APPENDIX A: Questionnaire for quantitative studies

Survey on Digital Financial Solutions (DFS) Adoption and Financial Inclusion

Introduction and Consent

Dear Participant,

My name is Thabo Maloka. I am a Master's student in Digital Business at the School of Business Science, University of the Witwatersrand, Johannesburg. My supervisor is Dr C Ndlovu. I am researching the adoption of digital financial solutions and their impact on financial inclusion in Sub-Saharan Africa. The study title is "Investigating the Adoption of Digital Financial Solutions and their Impact on Financial Inclusion: A Sub-Saharan Africa Perspective."

This survey will take approximately 10 - 15 minutes, and your perception is highly appreciated.

Collected data will be stored in a dedicated research data storage repository for five years and deleted seven years after collection, conforming to the University of the Witwatersrand data storage standards and regulations. Only my supervisor and I (the researcher) will have access to the data.

Your participation in the research study is entirely optional. You are not required to participate and can withdraw at any time. You have the right to decline to answer any questions. Participating in the study has no direct advantages, and you will not receive compensation. You will not be charged any fees for participating in the study.

The data collected will be utilised solely to address the research questions outlined in the study's objectives. It will be examined, interpreted, and used for scholarly publications or reports. The data may also be used for educational purposes to inform future research. Any additional use of the data will comply

with ethical guidelines and research integrity regulations. If the dissertation is published, it will be accessible on the university library website.

By proceeding, you consent to participate in this study:

- Yes
- No

Section A: UTAUT2 Constructs

Performance Expectancy

1. Using Digital Financial Solutions will improve my access to financial services.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

2. Digital Financial Solutions enable me to complete transactions more efficiently.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

Effort Expectancy

3. Learning to use Digital Financial Solutions is easy for me.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree

- Agree
- Strongly Agree

4. My interaction with Digital Financial Solutions is clear and understandable.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

Social Influence

5. People who are important to me think I should use Digital Financial Solutions.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

6. People whose opinions I value prefer that I use Digital Financial Solutions

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

Facilitating Conditions

7. I have the resources necessary to use Digital Financial Solutions (e.g., smartphone, internet access).

- Strongly Disagree
- Disagree

- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

8. I can get help from others when I have difficulties using Digital Financial Solutions.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

Hedonic Motivation

9. I find using Digital Financial Solutions enjoyable.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

10. The use of Digital Financial Solutions is fun.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

Price Value

11. Digital Financial Solutions are reasonably priced.

- Strongly Disagree
- Disagree
- Slightly Disagree

- Slightly Agree
- Agree
- Strongly Agree

12. The cost of using Digital Financial Solutions is low compared to the benefits.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

Habit

13. Using Digital Financial Solutions has become a habit for me.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

14. I use Digital Financial Solutions without thinking about it.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

Section B: Behavioural Intention and Use Behaviour

15. I intend to continue using Digital Financial Solutions in the future.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree

- Agree
- Strongly Agree

16. I will recommend Digital Financial Solutions to others.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

17. How frequently do you use Digital Financial Solutions?

- Daily
- Weekly
- Monthly
- Rarely
- Never

18. For what purposes do you use Digital Financial Solutions? (Select all that apply)

- Money transfers
- Bill payments
- Savings
- Loans
- Shopping
- Other (Please specify): _____

Section C: Financial Inclusion Impact

19. Digital Financial Solutions has improved my access to financial services.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

20. I now use more financial products (e.g., savings accounts and loans) because of Digital Financial Solutions.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

21. My frequency of financial transactions has increased due to Digital Financial Solutions.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

22. Digital Financial Solutions has made it easier for me to manage my finances.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

23. Digital Financial Solutions has allowed me to save more money.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

24. Digital Financial Solutions has provided me with better access to credit.

- Strongly Disagree

- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

Section D: Additional Questions

25. I trust Digital Financial Solutions to keep my financial information secure.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

26. Digital Financial Solutions providers handle transactions efficiently.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

27. I am satisfied with the customer service provided by Digital Financial Solutions companies.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

28. I find resolving issues with Digital Financial Solutions providers easy.

- Strongly Disagree
- Disagree
- Slightly Disagree

- Slightly Agree
- Agree
- Strongly Agree

29. I am confident in using Digital Financial Solutions for my financial transactions.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

30. Using Digital Financial Solutions has improved my financial literacy.

- Strongly Disagree
- Disagree
- Slightly Disagree
- Slightly Agree
- Agree
- Strongly Agree

Section E: Demographic Information

31. Age

- Under 18
- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65 or older

32. Gender

- Male
- Female
- Other

33. Country

- Kenya

- Nigeria
- Ghana
- Uganda
- Tanzania
- South Africa

34. Education Level

- No formal education
- Primary education
- Secondary education
- Tertiary education (College/University)
- Postgraduate education

35. Employment Status

- Employed
- Self-employed
- Unemployed
- Student
- Retired

36. Monthly Income (in ZAR)

- No income
- Less than R1,500
- R1,500 - R4,999
- R5,000 - R9,999
- R10,000 - R19,999
- R20,000 - R39,999
- R40,000 and above

Thank You

Thank you for taking the time to complete this survey. Your responses are invaluable to our research.