PhD Thesis

Chasing the Digital Savings Dream for Sub-Saharan Africa

Navigating Policy, Behaviour and Financial Inclusion Literature in Emerging Economies

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Dedication

To The Lord God,

Be all the glory, great things He has done.

Declaration

I certify that this thesis is my original work and has not been submitted elsewhere for the award of any other degree.

All the chapters in this thesis, including Chapter 2, Chapter 3, and Chapter 4, which are original manuscripts, were written by me. In addition, the identification and collection of relevant literature, data extraction, and data analysis for Chapter 2 were conducted by me. For Chapter 3, I examined the online repositories across Africa for policies on digital financial services and collected and analysed the policy data. In Chapter 4, I conducted the data collection, transcription and coding of interview transcripts, and data analysis.

My supervisors provided additional input on the manuscripts through reviews, feedback, and guidance.

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Abstract

Financial inclusion is a crucial mechanism for inclusive growth, poverty reduction, and economic development, particularly among the unbankable in developing countries that face financial infrastructural challenges. However, existing efforts to address these challenges have not yet translated into significant improvements due to the prevalence of financial inclusion barriers. This study begins by identifying the previous works, current themes, and gaps in financial inclusion literature in developing countries through a comprehensive literature review in Chapter 2. The review reveals that themes such as the determinants and the impacts of financial inclusion are the most commonly discussed research areas on developing countries. The article also suggests areas for further research.

One key financial inclusion tool with immense potential to reduce financial disparities, but has been largely overlooked in the literature as identified in the comprehensive literature review, is digital savings. Operating at the intersection of technology and financial access, digital savings for the unbankable can improve their economic well-being, among other potential benefits. Given the nascent nature of this research area, there is a need to understand how digital savings can be positioned to drive financial inclusion among the unbankable in developing countries. This becomes the underpinning research objective of this thesis.

Building on this and based on the findings of the comprehensive literature review, the second article in Chapter 3 reviews the policy documents across all 54 African countries

and demonstrates the lack of prioritisation of digital savings. Given the centrality of policies to the diffusion of financial innovation, this article shows that digital financial services policies mainly focus on electronic money, which can further create a debt burden on the unbankable. Additionally, the study develops a typology of digital savings from policies in Africa and suggests appropriate policy types that can stimulate digital savings uptake through the financial inclusion agenda.

Considering the lack of prioritisation of digital savings, Chapter 4 examines the usage behaviour of the unbankable with existing digital savings solutions. By using elements of the grounded theory approach, with semi-structured interviews conducted, this article identifies four usage behaviours and motivations driving digital savings usage. Furthermore, the study extends the affordance theory by revealing tiered affordances in the context of digital savings usage, which has not been previously examined in the literature on affordances.

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1. Introduction

Financial inclusion refers to the *provision of equal access to a range of formal financial services for every adult in society* (Arun and Kamath, 2015; Ozili, 2018; Kim et al., 2018b). An inclusive financial system ensures that individuals, households, and businesses have access to a wide range of suitable and affordable financial products and services, such as savings, credit, payments, and insurance (Hendricks and Chidiac, 2011; Global Partnership for Financial Inclusion, 2016; World Bank, 2018). This empowers people to save, borrow, invest, and improve their livelihoods (Ouma et al., 2017; David-West et al., 2018).

However, achieving financial inclusion has proven to be a persistent challenge, particularly in developing countries. The World Bank estimates that 1.7 billion adults globally are financially excluded (Demirgüç-Kunt et al., 2017). Traditional financial institutions often view this population as too risky, expensive, or impractical to serve (Vanroose, 2016; Alimi, 2018; Kamran and Uusitalo, 2019). Despite the challenges faced by providers, access to financial services represents a crucial gateway for people who are financially excluded to escape poverty and economic underdevelopment (Diniz et al., 2012; Bruhn and Love, 2014; Ouma et al., 2017; Ozili, 2018; David-West et al., 2018). Although financial inclusion first emerged as a policy concern in the late 1990s (Collard, 2007; Marron, 2013), it has continued to receive a lot of attention from government bodies, development agencies, policymakers, banks, and non-governmental organisations (NGOs), particularly in recent years. As a result, financial inclusion has

become a key blueprint for inclusive and equitable economic development globally (Chakravarty and Pal, 2013; Hart, 2017; Otchere et al., 2017; Alimi, 2018).

The World Bank and other international development agencies have made efforts to reduce poverty worldwide through various financial inclusion programs (World Bank, 2016; Otchere et al., 2017), recognising the economic benefits that result from access to financial services (Kumar et al., 2019). Along with these targeted interventions, researchers also engage in discussions on financial inclusion to establish definitions and measurement metrics. While there is an agreement on the significance of financial inclusion in economic development, there are ongoing debates about the best strategies and practices to achieve its goals (Bharadwaj and Suri, 2020).

Many studies have analysed the various aspects of financial inclusion, including its measurements, determinants, and impacts. Early research on financial inclusion focused on how the geographical distribution of financial infrastructure affects the accessibility and availability of financial services (Leyshon and Thrift, 1994; 1995), and how traditional financial systems can serve those who are currently unserved, often referred to as the *unbankable* (Aportela, 1999; Turnham, 2010; Dupas and Robinson, 2013a; Grayson et al., 2013; Goldberg, 2014). However, it has since been recognised that financial exclusion (i.e., lack of financial inclusivity) is a complex phenomenon (Kempson and Whyley, 1999) that is not limited to the physical locations of financial institutions (Kempson et al., 2000). Subsequent research has also shifted to examining

the specific groups of people who are unbankable or financially excluded, and identifying the barriers to financial inclusion (Collard, 2007).

1.1 Barriers to Financial Inclusion

Scholars have classified the barriers to financial inclusion into four categories: *demand-side*, *supply-side*, *policy*, and *behavioural*. Demand-side barriers include factors such as poverty (Kamran and Uusitalo, 2016; Wale and Makina, 2017), age (Ghosh and Vinod, 2017), gender (Gichuki and Mulu-Mutuku, 2018), religious beliefs (Zins and Weill, 2016), illiteracy (Yunus et al., 2016), digital illiteracy (Tiwari et al., 2019), and weak social networks (Murendo et al., 2018). Supply-side barriers include transaction and other associated costs (Lotto, 2022), lack of access (Kamran and Uusitalo, 2016), distance from financial institutions (Wale and Makina, 2017), documentation requirements (Demirgüç-Kunt and Klapper, 2013; Klapper and Singer, 2014), and product unsuitability (Kar, 2019). Policy barriers are related to government regulations and directives that constrain financial inclusion, such as high barriers to entry and other factors that limit the supply and discourage demand for financial services (Ozili, 2021; Awosika et al., 2021). Behavioural barriers include self-exclusion and lack of trust in financial institutions (Cnaan et al., 2012). While the demand and supply barriers of financial inclusion have been extensively studied in the literature, policy, and behavioural barriers have received less attention. Focusing solely on demand and supply factors without considering behavioural and policy factors only tells half of the story and has been insufficient to fully improve financial inclusion in Africa.

In sub-Saharan Africa, a larger proportion of people remain financially excluded compared to other developing countries. According to data, only 34% of adults in the region have formal financial accounts (Demirgüç-Kunt et al., 2015). As recent studies have highlighted the limitations of traditional banks as drivers of inclusive finance, *financial technology* (FinTech) has emerged as a potential solution to bridge financial exclusion in many developing countries (Demirgüç-Kunt et al., 2017; Alimi, 2018; Senou et al., 2019). However, studies on FinTech-driven financial inclusion are limited (Valenzuela et al., 2015; Lwanga Mayanja and Adong, 2016; Mazer et al., 2017; Ouma et al., 2017; Barry, 2018; Bastian et al., 2018), and research on digital savings, a key component of financial inclusion (Women's World Banking, 2015; Carmona et al., 2018), is often overlooked in favour of credit, mobile money, and payments (Duvendack et al., 2011; Maino et al., 2019).

1.2 Digital Savings as a Tool for Financial Inclusion

Access to formal savings is essential for the welfare of the unbankable (Karlan et al., 2014) as it represents their entry point to the formal financial system (Central Bank of Nigeria, 2019, p. 64) and a pathway to financial independence. Studies on financial inclusion have underscored the importance of savings as a foundation for financial services among low-income individuals. Savings can help individuals achieve financial freedom, smooth consumption, provide a buffer against emergencies, and alleviate poverty (Diniz et al., 2012; Bruhn and Love, 2014; Goldberg, 2014; Karlan et al., 2014).

Similar to other financial products in the financial inclusion value chain, barriers associated with accessibility, affordability, and convenience, are hindering the uptake and usage of savings products. Digital savings can be a potential solution to overcome these barriers (Kast et al., 2012; Dupas and Robinson, 2013a) by leveraging technology to improve the provision and effectiveness of savings products. Digital savings can also help improve savings behaviour and commitment to saving (Kast et al., 2012; Dupas and Robinson, 2013a). Research has shown that digital savings instruments such as M-Shwari in Kenya can improve the saving behaviour of the unbankable (Demombynes and Thegeya, 2012; Goldberg, 2014; Somville and Vandewalle, 2015; Dyer et al., 2017).

1.3 Research Motivation

As evidenced in previous studies, financial inclusion is crucial for economic development (Kumar et al., 2019). However, the field is complex and examining it provides a better understanding of its barriers, motivations and opportunities for maximising its potential. More importantly, in a rapidly evolving society, the need to understand the literature landscape is crucial, particularly for developing countries that are starved of adequate financial services.

Digital savings is a crucial aspect of advancing financial inclusion for the unbankable. Despite the numerous benefits that access to savings instruments can provide, insights on digital savings remain limited, and the uptake is relatively low among the unbankable, especially in developing economies (Demirgüç-Kunt et al., 2017). Besides, research on digital savings is at an early development stage, unlike mobile money and

digital payments studies that are prevalent in financial inclusion literature (World Bank, 2019). This lack of research on digital savings makes it difficult to fully understand the concept of financial inclusion. Additionally, the low uptake of digital savings and high uptake of digital payments can have negative consequences on the unbankable, as digital payment instruments can encourage spending habits that can further worsen their debt situation (Mercatanti and Li, 2014; Runnemark et al., 2015; Huebner et al., 2018). Therefore, research on digital savings is essential.

1.4 Research Context and Research Objective

This research focuses on developing economies, particularly sub-Saharan Africa, as it is a critical region in the financial inclusion discussion. Sub-Saharan Africa is a developing economic region with an estimated population of 1.1 billion people, 57% of whom are aged 15 and above (World Bank, 2020). The population is projected to double by 2050 due to a growing population of 2.7% per year (Paice, 2022). Despite being a major FinTech hub and known for mobile money – *the poster child* of financial innovations, a large portion of the world's unbankable population still resides in sub-Saharan Africa and the region lacks adequate financial infrastructure (Demirgüç-Kunt et al., 2015; Ofori et al., 2021; Adedokun and Ağa, 2021). Though mobile money has led to some improvements in account ownership, many people remain financially excluded. Additionally, the financial innovations have not significantly improved saving behaviour in the region, with only 15% of adults reportedly saving formally (Demirgüç-

Kunt et al., 2017), and others using informal and semi-formal methods that are unregulated and carry inherent risks.

Overall, this research aims *to understand financial inclusion literature in developing countries and explore the potential of digital savings to drive financial inclusion from both policy and behavioural perspectives.* This research objective translates into three publishable research articles (see Table 1.1).

(1). The first article, *Financial Inclusion in Developing Countries: A Review of Recent Themes in the Literature,* aims to identify the established and unexplored areas in the financial inclusion literature that pertains to developing countries.

(2). The second article, *Digital Savings for the Unbankable: Discrepancy of the Promise of Financial Inclusion and Digital Savings Policies in Africa,* is the first scholarly work to examine the extent to which sub-Saharan African government policies on financial inclusion prioritise digital savings.

(3). The final article, *Exploring the Affordances of Digital Savings among the Unbankable in Sub-Saharan Africa,* explores the behaviour of the unbankable towards digital savings offerings.

	Title of Article	Focus
1.	*Financial Inclusion in Developing Countries: A Review of Recent Themes in the Literature*	Systematic literature review of financial inclusion literature in developing countries
2.	*Digital Savings for the Unbankable: Discrepancy of the Promise of Financial Inclusion and Digital Savings Policies in Africa*	Digital savings policy landscape in Africa

3.	*Exploring the Affordances of Digital Savings among the Unbankable in Sub-Saharan Africa*	Digital savings usage behaviour of the unbankable

Table 1.1: Research output in three papers

1.5 Research Design

Every research is underpinned by a philosophical position that presents an understanding of what constitutes valid research and which research methods are best suited to address the problem in question. According to Saunders et al. (2019), there are five philosophical perspectives: *positivism*, *critical realism*, *postmodernism*, *pragmatism*, and *interpretivism*.

Positivism assumes that reality exists objectively and can be measured using properties independent of the researcher. Positivist studies tend to generate hypotheses that are tested to increase the understanding or explain the laws that define a phenomenon (Bell et al., 2019, p. 30). Critical realism posits that social reality is structured and the layers of reality are viewed through our senses and experiences rather than actual things (Saunders et al., 2019, p. 147). Post-modernist researchers argue that power relationships and language play a crucial role in understanding truth and reality. Pragmatism focuses on the practical effects of knowledge, accepting knowledge as relevant only if it supports actions (Saunders et al., 2019, p. 151). Pragmatists are, therefore, more concerned about practical outcomes than abstract concepts. Interpretivism acknowledges that humans differ from physical phenomena because of the meanings they create; hence, researchers should consider the distinctiveness of humans as opposed to natural science (Bell et al., 2019, p. 31; Saunders et al., 2019, p.

148). It assumes that social reality is deeply subjective and shaped by our worldviews (Collis and Hussey, 2014, p. 45). As different people from diverse backgrounds, circumstances, and eras make different meanings, so do they create and live through different realities (Saunders et al., 2019, p. 149). This study adopts the *interpretivism* philosophical stance.

Interpretive research aims to understand a phenomenon through people's worldviews and the meanings they assign to it (Myers, 2020). In the field of information systems research, interpretive research views the reality and knowledge of information technology as social products that cannot be understood independently of the social actors (Orlikowski and Baroudi, 1991). Therefore, interpretive information systems researchers believe that the social reality of technology is subjective and can only be interpreted (Orlikowski and Baroudi, 1991). This philosophical stance allows this study to examine the influence of digital savings and its broader context among the unbankable. Through this epistemological position, the researcher can understand how the policymakers and the unbankable perceive digital savings, their behaviour towards this financial technology, and the influence of digital savings in the broader context of financial inclusion. Instead of measuring, this study seeks to understand behaviour from the actions and consequences of human actors themselves. This research, therefore, addresses one of the criticisms of interpretive research – the unexplained unintended consequences of action (Orlikowski and Baroudi, 1991).

A qualitative research method was employed to gain a deeper understanding of the phenomenon. Three main data collection methods were used. First, the researcher conducted a review of peer-reviewed literature sources to understand the scope and depth of financial inclusion in developing countries. Second, secondary data from policy documents of the sub-Saharan African countries was used to analyse cross-country positions on digital savings. Finally, semi-structured interviews were conducted to understand the behaviour of the unbankable towards digital savings. Semi-structured interviews allow for the use of pre-formulated questions but also allow for new lines of inquiry to be pursued if they arise during the interviews (Myers, 2020, p. 149). This interview technique is widely used in business and management research.

The overall study uses some elements of the grounded theory strategy. Rather than using a pre-determined theoretical stance, grounded theory advocates for the generation of theory from empirical data (Corbin and Strauss, 2015, p. 6; Urquhart et al., 2010). Two methods were used for data analysis: *content analysis* and *constant comparison*. Content analysis supports the systematic organisation of a large textual dataset to derive meanings and draw conclusions (Bengtsson, 2016; Erlingsson and Brysiewicz, 2017). Constant comparison, which is the underlying technique in grounded theory, systematically compares all parts of the data to identify patterns, including variations and similarities (Hallberg, 2006, p. 7; Corbin and Strauss, 2015).

The research design used in this study is further discussed in the following chapters and articles.

1.6 Thesis Structure

The rest of this thesis is structured as follows (see Figure 1.1). Following this introductory chapter, Chapter 2 is the first article and provides a comprehensive literature review of financial inclusion studies. While the other two articles have their literature reviews, this article provides an understanding of the *knowns* and *unknowns* of financial inclusion research from the perspective of developing countries. It highlights the lack of research on digital savings and the limited use of theories in financial inclusion studies in developing countries.

Chapter 3 examines the discrepancies between the promise of financial inclusion and the focus on digital savings as a tool for financial inclusion in Africa. As such, it presents a typology of digital savings across the continent. Based on the researcher's knowledge, this study represents the first scholarly work on digital savings policies.

Chapter 4 examines the behaviour of the unbankable towards digital savings offerings and employs affordance theory as an explanatory tool for their behaviour. Finally, Chapter 5 concludes as it critically reflects on the studies by providing a research overview, summarising the research findings, highlighting the main research contributions, discussing the limitations of the studies, and suggesting directions for further research.

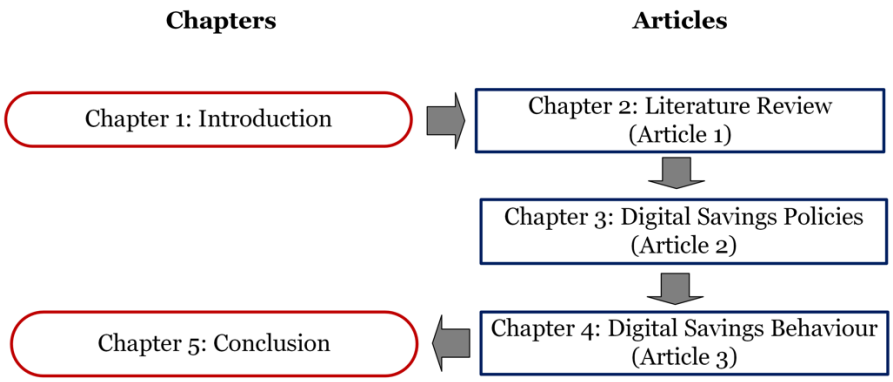

Figure 1.1: Thesis Structure

1.7 References

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2. Article I: Financial Inclusion in Developing Countries: A Review of Recent Themes in the Literature

2.1 Introduction

The explosion of interest in financial inclusion in recent times is generating discussions and research at a rate that outstrips individual comprehension. From all indications, this debate looks set to continue. As scholarly efforts continue to evoke knowledge, the understanding of financial inclusion becomes multifaceted and fragmented. This complexity makes it difficult to fully grasp the concept, define it correctly, or identify what is known or unknown from existing literature. In its elementary understanding, financial inclusion describes the *provision of and equal access to a range of formal financial services to every adult in society* (Arun and Kamath, 2015; Ozili, 2018; Kim et al., 2018b). However, financial inclusion is viewed differently across research communities, and these differences can impede knowledge advancement by creating research confusion.

As an enabler of economic empowerment, social inclusion, and other socio-economic gains (Abosedra et al., 2016; Demirgüç-Kunt et al., 2017; 2020; Churchill and Marisetty, 2020; Koomson et al., 2020a; David-West et al., 2021; Iheanachor et al., 2021), financial inclusion has become an important tool for governments to address societal inequalities. Supporting evidence shows the cruciality of financial inclusion for developing countries at the individual, household, firm, or national level (Kim et al.,

2018b). Of particular importance is financial inclusion among unbankable[1] individuals and households in developing countries (Menon, 2019; Ifediora et al., 2022), considering it is a viable mechanism to alleviate poverty, promote shared prosperity, and enhance sustainable development (Otchere et al., 2017; Demirgüç-Kunt et al., 2020; Wellalage et al., 2021). Through access to formal financial services, individuals and households can experience inclusive economic development (Pesqué-Cela et al., 2021; le Polain et al., 2018; Liu and Walheer, 2022). For firms, access to finance can drive economic growth and investment (Demirgüç-Kunt and Singer, 2017). Lastly, at the national level, inclusive finance has the transformative power to create employment, generate economic opportunities, and promote financial stability (Kim et al., 2018a; Ozili, 2018; Omar and Inaba, 2020).

The significance of financial inclusion discourse for developing countries is further pronounced considering the large infrastructural gaps and high financial exclusion that plague these nations (Pelletier et al., 2019). According to Beck et al. (2009), less than half of the adult population in developing countries is financially included. Given the weak economic indicators, poor governance structures, intense conflicts, and the often volatile political climate afflicting developing countries (Hamadeh et al., 2021; Lyons and Kass-Hanna, 2021), studies have shown that this high financial exclusion provokes greater vulnerabilities for the unbankable. Such vulnerabilities including poverty, inequality, social exclusion, unemployment, and unfair treatment by banks (Kamran

[1] The *unbankable* refers to individuals or households who are perceived as unprofitable to serve by traditional banks due to being poor, non-literate, distant, lacking a form of identification or possess some form of societal incapability. However, such perception of their attributes may be incorrect.

and Uusitalo, 2019), along with economic uncertainties place developing countries at the forefront of financial inclusion discussions and interventions. Access to financial services can, however, alleviate these vulnerabilities among the unbankable.

Subject to this, international developmental bodies such as the World Bank adopted financial inclusion as a solution for socio-economic vulnerabilities and a blueprint for the United Nation's sustainable development goals (SDGs) (Sahay et al., 2015; Klapper et al., 2016). Likewise, in recent times, there has been a global commitment from world leaders, policymakers, and development agencies alike to attain financial inclusion (Lyons and Kass-Hanna, 2021). However, despite the concerted efforts, the statistics show that more work is required to stimulate financial inclusion globally, notably among developing countries (Demirgüç-Kunt et al., 2015; Allen et al., 2016; Neaime and Gaysset, 2018; Lyons and Kass-Hanna, 2021). Moreover, with the emergence of Covid-19 and its associated financial shocks, there are concerns that more people may fall deeper into poverty (World Bank, 2020; Kharas and Dooley, 2021). Therefore, financial inclusion for the unbankable is no longer a promise but a priority.

Beyond the multidisciplinary nature and scholarly explosion of financial inclusion, empirical insights are still quite limited as the industry and research communities rely solely on the World Bank's Global Findex database for financial inclusion indicators (Soumaré et al., 2016), yet revealing the low financial access that plague developing countries (Demirgüç-Kunt and Klapper, 2012a). To better understand this problem, studies on developing countries have offered perspectives relating to the determinants

and metrics (Pesqué-Cela et al., 2021), socioeconomic views (Aterido et al., 2013; Efobi et al., 2014; Morsy, 2020), country-level and global indices (Demirgüç-Kunt and Klapper, 2012a; b), impacts (Bruhn and Love, 2014; Hussain et al., 2019; Demir et al., 2020; Fowowe, 2020), and policies (Demirgüç-Kunt et al., 2013) of financial inclusion. Some studies go as far as developing new financial inclusion theories (Kling et al., 2020). These studies are, however, too disconnected to understand financial inclusion in its entirety. As a result, the evidence is mixed and unclear (Demirgüç-Kunt et al., 2020), with a significant missing piece of evidence on financial inclusion given the limited period of available data (Omar and Inaba, 2020). Moreover, the sporadic evolution and growth of the field in recent years make it hard for researchers to keep abreast with recent developments, including newer methods of actualising financial inclusion such as digital savings. How such methods are positioned in financial inclusion research is equally unknown. As a result, a comprehensive understanding of the breadth of financial inclusion studies is necessary.

The theoretical stance on financial inclusion for developing countries is equally inconclusive. Given the multi-sided nature of the domain, research efforts have come from different subjects. This creates a problem as financial inclusion is conceptualised differently per subject. For example, information systems (IS) studies tend to examine financial inclusion from technology adoption and acceptance theories (Kamdjoug et al., 2021; Wamba et al., 2021), while economists tend to consider socioeconomic and macroeconomic theories of financial inclusion (Niankara, 2020; Song et al., 2021). Much as this diversity can engender a potential for strength in depth, it, however,

exposes financial inclusion to different interpretations. There is, therefore, a need to consolidate these dimensions under one study to better understand the concept.

Given these inconsistencies which necessitate a holistic scholarly exposition, we attempt to address the following questions: *(1a) What are the current research areas and themes in cross-disciplinary financial inclusion studies pertaining to the unbankable in developing countries? (1b) What are the current gaps in knowledge about financial inclusion in developing countries as identified in the literature?*

One technique for distilling extant scholarly studies is literature reviews. Literature reviews play a crucial role in knowledge advancement, theory development, and shaping future research, including within the IS domain (Webster and Watson, 2002; Boell and Cecez-Kecmanovic, 2014; Paré et al., 2015; Murungi and Hirschheim, 2021). Most importantly, literature reviews designed and conducted using a rigorous technique, systematic framework, and sound methodological practice produce robust analyses that are devoid of common flaws including bias, errors, omissions, misconceptions, non-replicability, and lack of rigour (Tranfield et al., 2003), which could impair theoretical and practical usefulness (Paré et al., 2015). Such systematicity, robustness and transparency are achieved through a systematic literature review (SLR) method. Although the strength of the SLR technique is widely acknowledged, the potential in the IS domain is still vastly underutilised (Murungi and Hirschheim, 2021). Regardless of this underutilisation, SLRs are critical to understanding the breadth of

research in established disciplines while valuable for comprehending emerging subjects such as financial inclusion (Paré et al., 2015).

This study conducts a comprehensive literature review using an SLR method to identify 308 peer-reviewed articles from medium (ABS-2) to high-ranking (ABS-4*) journals published up to March 2022. Our findings reveal key themes that emerge from the extant literature, in addition to highlighting the lack of theoretical work in financial inclusion research. The results of this review contribute to financial inclusion literature by identifying the scope, boundary, and depth of efforts within financial inclusion research in developing countries to reveal the themes that scholars have previously examined or overlooked, including digital savings.

The following section outlines the previous literature reviews. Section 2.3 discusses the SLR technique applied. Section 2.4 provides a descriptive overview of the financial inclusion landscape in developing countries and the research output. Section 2.5 considers what is known about financial inclusion in developing countries. Section 2.6 identifies the research unknowns and suggests future research directions, while Section 2.7 concludes the paper.

2.2 Previous Literature Reviews

Attempts to review the theoretical and empirical works in financial inclusion date back to the 2000s. Beck and Demirgüç-Kunt (2008) heralded financial inclusion literature reviews by summarising measurements and analytical efforts to showcase the impacts of access to finance. This first attempt, however, had significant drawbacks. For

example, there was no systematic approach to the literature survey. Moreover, rather than a review, the study merely summarises the literature, in addition to lacking the must-have robustness that scholarly works require.

Years later, Koku (2015) reviewed cross-disciplinary literature on financial exclusion and noticed the significant contributions of economic geography and economic researchers in advancing the subject. Nonetheless, the study did not follow a clear methodological approach, claiming *"no specific methodology is required"* for a literature review paper. Next, Kim et al. (2018b) examined the nexus of mobile financial services, financial inclusion, and development. They found that extant literature addressed three research areas – the *delivery*, *environmental factors*, and *impact* of mobile financial services, neglecting the demand and supply influences. The concentration on mobile financial services, however, limited the scope and paper sample reviewed to 54 research articles, which narrowed the understanding of financial inclusion. Subsequently, Fernández-Olit et al. (2020) provided an SLR of published research on financial inclusion and exclusion. While they found that fewer studies focused on vulnerable groups, their work only considered developed countries. Likewise, Duvendack and Mader (2020) conducted a systematic review of reviews but only focused on the impacts of financial inclusion on low and middle-income countries, disregarding other critical areas of study.

In recent times, Ozili (2021) reviewed the evidence of financial inclusion research across the world, revealing that financial inclusion affects and depends on the degree of

financial innovation, financial literacy, poverty levels, stability of the financial system, and policy frameworks that vary across countries. Nonetheless, they directed their attention to post-2010 studies while equally considering the grey literature, which is theoretically weak. In the same breath, Pesqué-Cela et al. (2021) examined financial inclusion, but only through its definitions and measurements, revealing a bias for supply-side and quantitative measures. Finally, Khan et al. (2022) reviewed the role of financial literacy in achieving financial inclusion; however, with 77 papers in their final selection.

In other literature reviews, there has been a focus on specific financial inclusion instruments. Steinert et al. (2018)'s systematic review focused on the effect of saving promotion on household savings, consumption, and investments. Di Giannatale and Roa (2019) reviewed the barriers to formal saving, focusing on the economic effects. Nan et al. (2020) reviewed 82 empirical studies on the socio-economic impacts of mobile money in sub-Saharan Africa to further strengthen the multi-level benefits of financial innovation. Following Aron (2018)'s review of mobile money studies, Ahmad et al. (2020) equally focused on mobile money studies in Africa, suggesting additional efforts to establish the potential of mobile money, but a systematic approach was lacking in their paper. Serwaah (2022) reviewed 47 studies at the intersection of crowdfunding and gender, suggesting that the outcome of female-led campaigns depends on the external factors that drive opportunities. From the information systems field, Ng et al. (2022) reviewed FinTech literature revealing a lack of research on FinTech strategies along with several limitations of extant works. Additional reviews on FinTech

(Lagna and Ravishankar, 2022), microfinance (Gutiérrez-Nieto and Serrano-Cinca, 2019; Nogueira et al., 2020), and microcredit (Kara et al., 2021), are well documented in research.

The weaknesses in current literature reviews on financial inclusion as summarised in Table 2.1 necessitates a comprehensive literature review. The lack of a comprehensive literature review constricts the knowledge base and furtherance of financial inclusion research. While existing efforts cannot be understated as they uncover financial inclusion progress, current studies indicate a limitation in scope, methodological approach, and sample size. Besides, the generalisation of the analyses overlooks the centrality and microscopic details that developing countries deserve.

Already, studies are acknowledging the potential benefits of financial inclusion across a wide spectrum of subjects with economics, social science, and information systems generating significant interest. In economics, financial inclusion creates a channel for poverty alleviation (Churchill and Marisetty, 2020; Omar and Inaba, 2020; Nsiah et al., 2021). Hence, economic researchers explore the socioeconomic impacts of access to finance (Reyers, 2019; Erlando et al., 2020; Lal, 2021; Lee et al., 2022a), while addressing the socioeconomic barriers that prevent such access (Ji, 2020; Pomeroy et al., 2020). Social scientists reveal the positive effects of financial inclusion on gender equality (Arnold and Gammage, 2019), empowerment (Parmanand, 2021), and societal well-being (Raj et al., 2018). Information system researchers propose that IT-driven financial innovations can accelerate financial inclusion for the greater good of the poor (Joia

and dos Santos, 2019; Senyo et al., 2022). However, these benefits can be leveraged only if one can fully understand financial inclusion regardless of its numerous branches.

Select papers	Objective	Number of papers reviewed	Methodology	Systematic review?	Scope	Limitation
Koku (2015)	Provides an overview of financial exclusion research across multiple disciplines	Not specified	Not specified	No	Financial exclusion	Limited focus on developing countries. No specific methodology was adopted
Kim et al. (2018b)	Explore the nexus of mobile financial services, financial inclusion, and development	54	The 3-stage systematic review process by Tranfield, Denyer, and Smart (2003) & Siddaway (2014	Yes	Mobile financial services (MFS)	Limited to MFS as a means to financial inclusion and development Limited sample size
Duvendack and Mader (2020)	Appraise existing systematic reviews of the economic, social, behavioural, and gender-related impacts of financial inclusion in low and middle-income countries	11	Meta review	Yes	Impacts of financial inclusion	Focus only on systematic review papers
Fernández-Olit et al. (2020)	Provide a systematic literature review of the research on financial inclusion and exclusion in developed countries	52	Method proposed by Massaro et al. (2016)	Yes	Financial inclusion & exclusion	No consideration for developing countries Limited sample size
Pesqué-Cela et al. (2021)	Conduct a systematic review of definitions and measurements of financial inclusion	10	Not specified	No	Definition and measurement of financial inclusion	Systematic method of selecting papers was not specified Small sample size

Khan et al. (2022)	Examine the role of financial literacy in financial inclusion	77	Systematic mapping	Yes	Financial literacy	Limited scope as the paper focuses only on the role of financial literacy in financial inclusion Limited sample size

Table 2.1: Previous literature reviews on financial inclusion

2.3 Methodology

A systematic literature review (SLR) technique is a standard review methodology to consolidate the extant body or knowledge base of research on a subject (Kraus et al., 2020). Drawing on the SLR technique, also known as *structured literature review*, helps to eliminate bias, improve transparency, enhance rigour in selecting relevant studies (Tranfield et al., 2003), and provide steps for replication (Wang and Chugh, 2014). In doing so, this comprehensive literature review can avoid the pitfalls of traditional reviews.

For scholars, an SLR technique is an essential building block for theory development (Webster and Watson, 2002; Murungi and Hirschheim, 2021) as it prevents them from *"reinventing the wheel"* while facilitating incremental research by building on previous studies (Schryen, 2015). Likewise, an evidence-informed review also provides a high-quality knowledge base for policy and practice. This approach, therefore, ensures a high-level and reliable review of the literature can serve as a foundation and knowledge stock for further research development (Denyer and Tranfield, 2009). Using an SLR technique is particularly necessary given the evolving nature of digital financial

services as critical tools for financial inclusion. It enables policymakers to make informed financial inclusion policy decisions, practitioners to address financial inclusion gaps, and researchers to examine understudied domains.

2.3.1 Systematic Guidelines for Literature Review

The reliability and validity of a literature review are dependent on the methodological rigour applied (Brocke et al., 2009). With this in mind, this paper conducts a comprehensive review relying on a similar process from the systematic review guidelines proposed by Okoli (2015) and Kraus et al. (2020). Each of the steps is discussed in the section below.

Step 1: Outline the Purpose

The research question outlines the purpose of the study. By defining the previous literature reviews on financial inclusion research and identifying the gaps, this paper refrains from duplication of efforts. However, previous literature reviews are limited by scope, domain, constructs, and dataset. Besides, the reviews are heavy on traditional finance. Given the lack of comprehensive literature review in financial inclusion research, the goal is to find as many studies as possible that can address the research question (Kitchenham and Charters, 2007). Therefore, this study considers financial inclusion studies from all disciplines to provide a comprehensive body of work to serve as a reference point for connecting the dots in financial inclusion research.

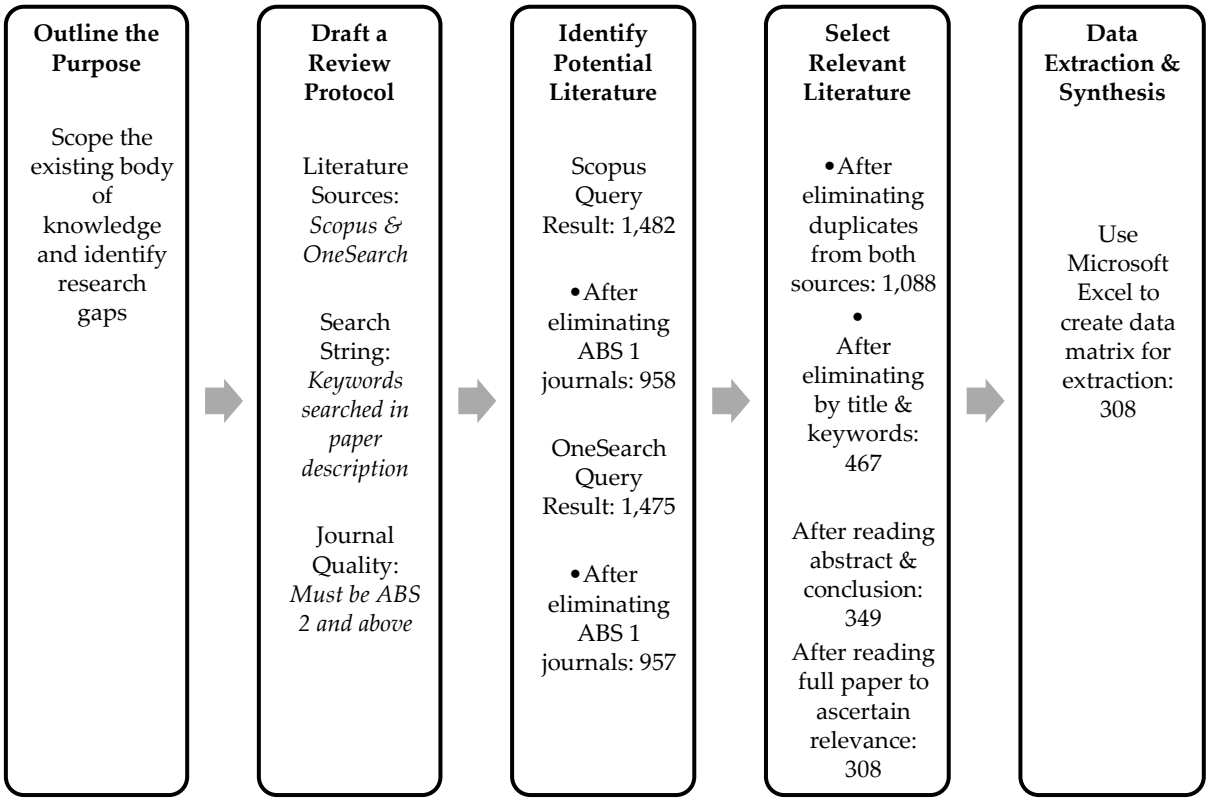

Figure 2.1: Systematic literature review process adopted

Step 2: Draft a Review Protocol

A review protocol is required beforehand to ensure a transparent and high-quality process for the literature search and evaluation (Tranfield et al., 2003; Kraus et al., 2020; Schryen, 2015). This protocol (see Figure 2.1) specifies the parameters for search strings, databases, journal quality, and inclusion and exclusion criteria. Hence, these journal selection parameters were specified during this stage.

- *Literature Sources*

A systematic scan of academic journal databases was conducted to capture the growing body of work in the financial inclusion domain in developing countries. Scopus was the preferred database for this study because it represents the most

extensive up-to-date citation and abstract database with relevant journals from several subjects (Aghaei Chadegani et al., 2013; Ali et al., 2022), covering more topics than the Web of Science database (Abrizah et al., 2013; Bartol et al., 2014) and has a more vigorous quality control process than Google Scholar (Gutiérrez-Nieto and Serrano-Cinca, 2019). This was complemented with the OneSearch library, a search engine connected to major literature databases such as ScienceDirect, Emerald Insight, Springer Link, and Wiley Online Library. Using Scopus and OneSearch broadened the scope and reinforced the confidence in our search results.

- *Search String*

Best practices consider search strings to emerge from the research questions while including synonyms and alternate spellings (Kitchenham and Charters, 2007). The keywords were carefully selected to consider other terms that capture the central theme – "*financial inclusion*." Hence, the Boolean practice was adopted to generate a search string used as follows: "*financial inclusion"* OR "*financial access*" OR "*inclusive finance*" OR "*access to finance*." The use of the ("") ensured only the specific term was returned. The query searched for studies with any of these keywords in their 'Description' (i.e., the title, abstract, and keywords).

- *Journal Quality*

Only papers rated 2 and above per the Association of Business Schools (ABS) ranking were selected for review to ensure high-quality results. Much as papers ranked ABS 1 also provide valuable insights for research in developing economies, higher-ranked

papers often provide the most reliable and well-supported research. All papers were peer-reviewed and published in English. Peer-reviewed works such as journal articles are common sources of academic quality and novelties (Ali et al., 2022). Conference proceedings, working papers, reports from development agencies, and other sources with relaxed or no peer-reviewed process were excluded from this review.

Step 3: Identify and Select Relevant Literature

The search string returned 1,475 and 1,482 peer-reviewed articles from OneSearch and Scopus, respectively. The details of the retrieved articles were managed and refined in Microsoft Excel using functions such as VLOOKUP and MATCH. We cross-checked the combined 2,957 articles to eliminate the ones that do not address the concept of financial inclusion (as highlighted in the introduction) within developing countries. The screening stages are detailed below:

- Cross-check articles to eliminate duplicates from multiple databases: *the number of articles reduced to 1,088 papers*
- Check articles by their titles and keywords for relevance: *this condensed the results to 467 papers*
- Read abstracts and conclusions to ascertain relevance: *349 articles emerged from this stage*
- Read the remaining articles to ascertain their relevance: *308 articles were validated for extraction and analysis*

Step 4: Data Extraction and Synthesis

Microsoft Excel was used to record and create a data matrix for the resulting studies. Following Kraus et al. (2020) recommendation, the relevant data for synthesis and all the papers reviewed were extracted into a table. This tabulation provides an audit trail to match the claims made in the literature review to the underlying evidence (Denyer and Tranfield, 2009). For synthesis, a concept-driven approach, rather than an author-centric one, was adopted to answer the research question. This strategy espouses quality, considering that the latter is narrow and will likely end up as a summary rather than a literature review (Kraus et al., 2020).

Descriptive analysis and bibliometric maps are the additional quantitative techniques used to produce an overview of the financial inclusion literature landscape. The bibliometric analysis was created using the latest version of VOSviewer – a tool used for co-authorship and co-occurrence analyses. Instead of displaying a '*word cloud'* of keywords as obtainable with applications such as NVivo, VOSviewer shows the connection between a pair of keywords and denotes the strength of such relationship by a positive numerical value (Ali et al., 2022). Additional visualisations were presented using Tableau – a visual analytics software for business intelligence.

2.4 Overview of Financial Inclusion in Developing Countries

2.4.1 Research Output

The publication years of the 308 papers range from 2005 to 2022 (March), approximately half (169 articles) of which were published between 2020 and 2022 (see

Table 2.2). The steady rise in publication output (see Figure 2.2) indicates the demand and increasing interest in financial inclusion research in developing countries. However, the emergence and success of mobile money in Kenya are contributing factors to this explosion of interest. This is significant considering that new technologies naturally emerge from developed countries before expanding to the Global South (Lashitew et al., 2019).

Period	Number of Papers
Up to 2010	6
2011–2015	39
2016–2020	150
2021–2022	113
	Sum (308)

Table 2.2: Publication by period

From Table 2.3, the geographical spread reveals most of the publications focused on Africa (98), closely followed by Asia (92), while North and South America account for nine papers each. The focus of research on these continents suggests the global concentration of developing countries and the apparent criticality of financial inclusion to their development.

Continent	Number of Papers
Africa (98)	98
Asia (92)	92
North America (9)	9
South America (9)	9
Cross-continent (81)	81
	Sum (289)[†]

Table 2.3: Publication by continent

[†]17 conceptual papers did not focus on any region.

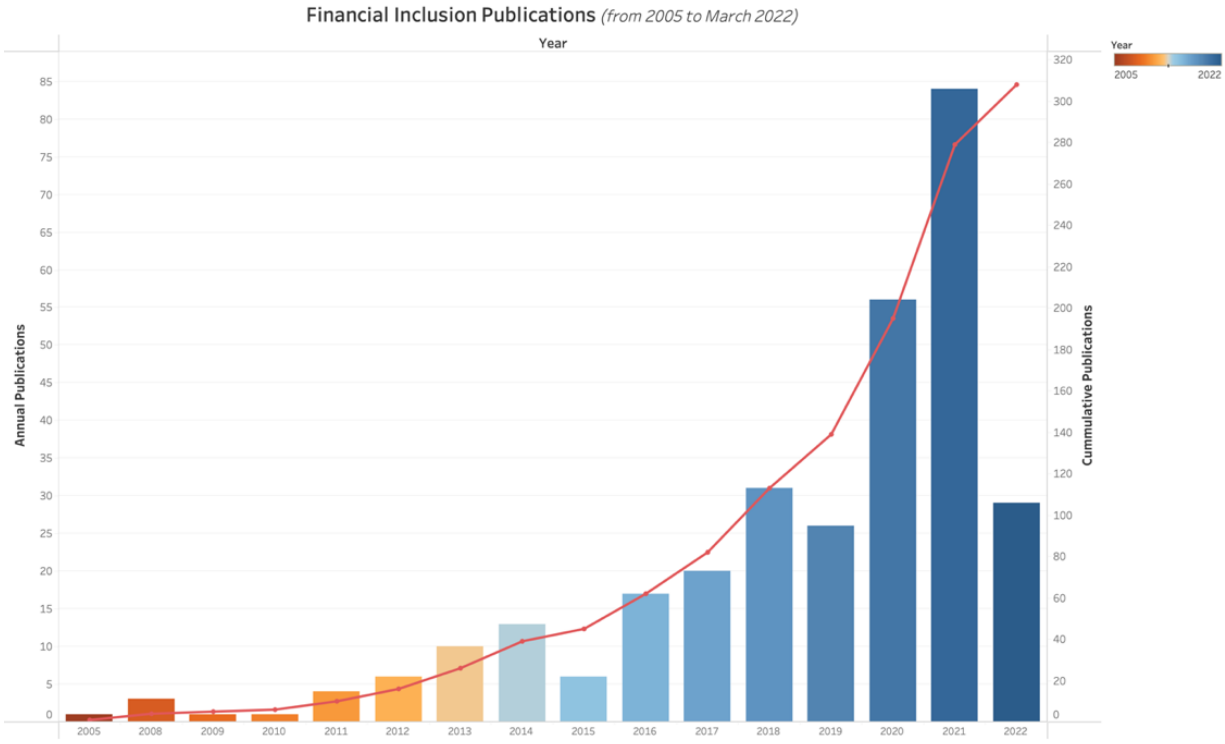

Figure 2.2: Financial inclusion publications by year

Most papers were published in ABS 2 journals (59%) and trailed by ABS 3 journals (35%) (see *Figure* 2.3). This implies financial inclusion studies from developing countries are mostly published in lower-ranked journals. This can be interpreted in two ways. One, the researchers from these regions may not target highly ranked journals. Two, the papers may not meet the quality criteria of highly ranked journals and are thus rejected, leaving researchers to '*step down*' to lower ranks. For specificity, World Development (19) accounted for the most publications among the journals, with Applied Economics (14) and Emerging Markets Finance and Trade (12) coming in the second and third positions, respectively (see Table 2.4).

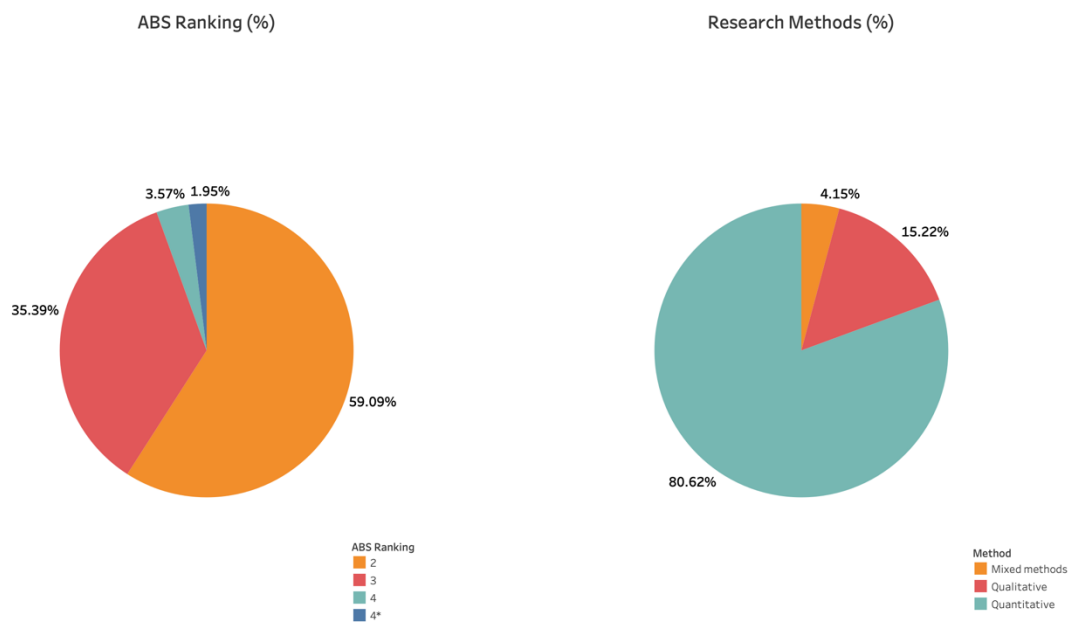

Figure 2.3: Publications by research methods & ABS ranking

Journal	Number of Papers	Journal	Number of Papers
Applied Economics	14	Journal of International Development	11
Economic Modelling	8	Pacific Basin Finance Journal	4
Emerging Markets Finance & Trade	12	Research in International Business and Finance	6
European Journal of Finance	5	Review of Development Economics	6
Finance Research Letters	9	Review of Development Finance	7
Information Technology for Development	7	Strategic Change	6
International Journal of Development Issues	6	Technological Forecasting and Social Change	5
International Journal of Finance & Economics	10	World Bank Economic Review	4
Journal of Business Research	4	World Bank Research Observer	4
Journal of Development Economics	9	World Development	19
Journal of Development Studies	10	Others	142
Sum (308)			

Table 2.4: Publication by journals

Even though information systems underpin our research, we understand that financial inclusion literature is multidisciplinary; hence, the distribution of the publications indicates financial inclusion has attracted the attention of researchers from diverse fields. Economics (161) is the most productive subject (see Table 2.5), representing more than half of the entire literature sample. This suggests the influence of economists on financial inclusion research cannot be understated, as they use diverse metrics to measure the state of financial inclusion and its impact on economic growth. Finance is a distant second (46) and Information Systems third (28), with the least publications coming from three subjects, i.e., computer science, business administration, and management science, with one paper each.

Subject	Number of Papers
Accounting	7
Development studies	15
Economics	161
Entrepreneurship & Strategy	6
Finance	46
Geography	6
Information Systems	28
Public policy	6
Social science	8
Others	25
	Sum (308)

Table 2.5: Publication by subject

Figure 2.3 also shows a strong preference for quantitative research methods (80.62%) among the papers reviewed, with mixed methods receiving the least attention (4.15%). The use of mixed methods attempts to make up for the lack of qualitative research. However, this still pales in comparison with the spread of quantitative efforts in

financial inclusion research. This bias for quantitative studies can limit the contextual insights, rich perceptions, and social experience of the unbankable that are available through qualitative research.

In terms of the research type, modelling (109) was mostly used (see Table 2.6), representing more than one-third of the papers reviewed. This further confirms scholars' preference for quantitative research on financial inclusion. Surveys (48), exploratory studies (43), and case studies (32) also received significant attention. Forecasting (1) was, however, the least used.

Research Type	Number of Papers
Case Study	32
Conceptual	19
Cross-sectional	6
Discourse Analysis	1
Ethnography	8
Experiment/RCT	17
Exploratory	43
Forecasting	1
Grounded theory	2
Inductive	1
Interpretive	2
Literature Review	14
Literature Summary	2
Longitudinal	3
Modelling	109
Survey	48
	Sum (308)

Table 2.6: Publication by research type

2.4.2 Research Subject, Scope, and Dimension

The research subject, in this context, indicates the stakeholder that the research aims to investigate or through which the research questions are being examined.

Households were the primary subjects of the papers reviewed, accounting for 61 articles (see Table 2.7). The countries (51) and the unbankable (38) were also highly prioritised. This suggests financial inclusion parameters can be measured at the household level to give an indication of inclusion depths among the unbankable in developing countries.

Research Subject	Number of Papers
Banks (15)	15
Countries (51)	51
Employees (4)	4
Farmers/Agropastoralists/Smallholders (8)	8
Financial service agents (6)	6
FinTech/Telco/Non-bank providers (11)	11
Firms/MSMEs (14)	14
Households (61)	61
Merchants (2)	2
Microfinance Institutions/Credit Unions (8)	8
Micro-entrepreneurs (6)	6
Practitioners/Managers (5)	5
Province/City/Community (10)	10
Regulators (3)	3
Remittance/cash transfer beneficiaries (2)	2
Students/Youths (3)	3
Unbankable (38)	38
Users (formal/informal finance) (29)	29
Women (20)	20
	Sum (296) *

Table 2.7: Publication by research subject

*12 conceptual papers did not focus on any research subject

Research scope refers to the specific boundary that defines the area of enquiry and covers the extent to which the subject matter is addressed (Chukwuere, 2021). Piggybacking on this, banks (76), formal finance (62), and mobile money (32) were the most common research areas examined (see Table 2.8), suggesting these are key

sources of financial services in developing countries. Mobile or digital savings and crowdfunding were, however, understudied, indicating limited knowledge in those spheres.

Dimension indicates the direction of investigation of a study. It also represents the central point of interest of the research, researcher, or research question. In this case, the socio-economic impact of financial inclusion and financial services (72) was the most sought-after dimension, while the determinants (39) and gender (25) were also fairly discussed (see Table 2.9). The emphasis on socio-economic impact signifies the contribution of financial inclusion to driving the socio-economic conditions of the unbankable. As previously discussed in prior literature, through financial inclusion, the unbankable can reduce poverty, mobilise savings, and achieve economic growth and financial health among others (Ouma et al., 2017; Churchill and Marisetty, 2020; Adedokun and Ağa, 2021).

Research Scope	Number of Papers
Banks	76
Blockchain	4
Cash transfer	2
Credit	22
Crowdfunding	1
Digital banks	3
Digital credit	2
Digital financial services	11
Electronic transfers	2
FinTech	12
Formal finance	62
Informal finance	5
Islamic banking/finance	4
Microfinance	31
Micro-insurance/Insurance	2
Mobile banking	5

Mobile financial services (MFS)	6
Mobile money/wallet	32
Mobile savings	1
Payments (mobile & digital)	10
Remittances	6
Informal Savings groups**	4
Savings	15
Social banking	1
	Sum (319)†

Table 2.8: Publication by research scope

** Including Rotating Savings and Credit Associations (ROSCAs) & Village Savings and Loan Associations (VSLAs)

† Some studies examined more than one research area

Research Dimension	Number of Papers
Access	8
Adoption	13
Behaviour	9
Business model & Strategy	14
Demand & supply factors	5
Determinants	39
Diffusion of innovation	5
Drivers (Technology & adoption)	3
Entrepreneurship/Employability	5
Gender	25
Markets & institutions	3
Measurement/indicators	11
Opportunities & barriers	4
Other Impacts***	25
Policy/Regulations	11
Socio-economic impact	72
Usage & Intention to Use	16
Others	40
	Sum (308)

Table 2.9: Publication by research dimension

*** These include Educational, Energy, Environmental, Health, Macro-economic, & Sustainability Impacts

2.4.3 Keywords Analysis

Analysing the keywords in existing research papers allows for mapping the emerging trends in the research area (Gutiérrez-Nieto and Serrano-Cinca, 2019; Ali et al., 2022).

In the VOSviewer co-occurrence analysis (see Figure 2.4), 2,349 keywords were recorded. After re-labelling similar words and phrases, 74 keywords met the minimum threshold of three occurrences, with varying link strength. The link strength represents the number of links of a particular keyword to other keywords. Our results indicate that financial inclusion is the most occurring keyword with 185 occurrences and 329 link strength, as shown in Table 2.10. This adds credence to the choice of keyword used in the search string. The table also reveals other keywords such as mobile money (31 occurrences, 69 link strength), financial access (29 occurrences, 51 link strength), microfinance (28 occurrences, 59 link strength), developing countries (25 occurrences, 55 link strength), FinTech (22 occurrences, 46 link strength), and economic growth (19 occurrences, 40 link strength), among others.

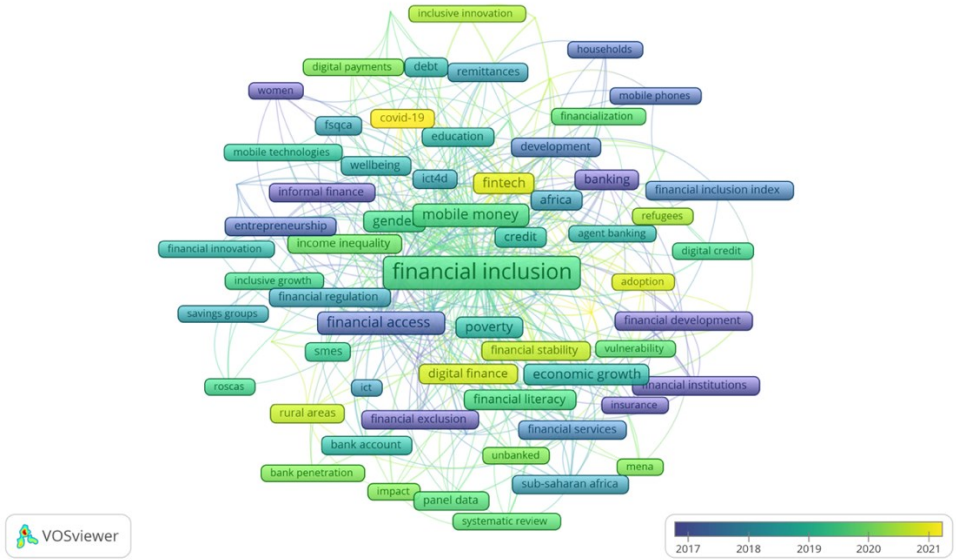

Figure 2.4: Knowledge map from keyword co-occurrence analysis

Keyword	Total link strength	Occurrences
financial inclusion	329	185
mobile money	69	31

financial access	51	29
microfinance	59	28
developing countries	55	25
fintech	46	22
economic growth	40	19
gender	42	17
poverty	44	16
savings	32	16

Table 2.10: Link strength and occurrences

Top on the list of current trends is Covid-19, with an average year of publication of 2021.25 and 4 occurrences (see Table 2.11). Next are the system generalised method of moments (GMM) and FinTech, both with an average year of publication of 2020.83 and 2020.72, and 6 and 22 occurrences, respectively. This result can be interpreted in two folds. First, scholars have an emerging interest in analysing financial inclusion using GMM as a technique. Second, FinTech has become a noticeable tool for addressing financial inclusion threatened by the pandemic. Other trending keywords include adoption, digital finance, SDG, and financial stability. This indicates the adoption of digital finance can be a driver for achieving financial stability and the UN sustainable development goals (SDG) at large.

Keyword	No. of occurrences	Avg. publication year
Covid-19	4	2021.25
System Generalised Method of Moments	6	2020.8333
FinTech	22	2020.7273
Adoption	3	2020.6667
Digital finance	10	2020.6
SDG	5	2020.6
Financial stability	6	2020.5
Rural areas	4	2020.5
Mobile payments	5	2020.4
Inclusive innovation	3	2020.3333
Panel VAR	3	2020.3333

Refugees	3	2020.3333
Technology diffusion	3	2020.3333
Mobile banking	4	2020.25
Bank penetration	3	2020
Digital payments	3	2020
Impact	3	2020
MENA	3	2020
Structural Equation Modelling (SEM)	3	2020
Unbanked	3	2020

Table 2.11: Top 20 recent topics in financial inclusion in developing countries

2.4.4 Theoretical Frameworks

Only 67 of the 308 papers applied a theoretical lens, with 18 of them using two or more theoretical frameworks. This suggests that theories are not prioritised in financial inclusion studies. However, 56 of the 67 studies that considered theories emerged between 2018 and 2022, indicating a renewed consideration for theories among recent publications (see Table 2.12).

Year
2011 (1)
2012 (3)
2013 (1)
2014 (1)
2016 (2)
2017 (3)
2018 (7)
2019 (9)
2020 (16)
2021 (20)
2022 (4)
Subtotal (67)

Table 2.12: Publications with theories by year

Technology adoption and usage theories were the most sought-after theories, with the Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT) leading with 5 and 3 occurrences, respectively (see Table 2.13). Technology diffusion theories were also fairly considered. This signals that understanding the diffusion and adoption of financial services is central to driving financial inclusion.

Theoretical Lens	Papers	Occurrence
Technological Acceptance Model (TAM)	Agwu (2020), Asongu et al. (2021), Bisht & Mishra (2016), Kamdjoug et al. (2021), Wamba et al. (2021)	5
Unified Theory of Acceptance and Use of Technology (UTAUT/UTAUT2)	Kamdjoug et al. (2021), Senyo et al. (2021), Senyo & Osabutey (2020)	3
Actor-Network Theory (ANT)	Adaba et al. (2017), Maurer (2012)	2
Diffusion of Innovation (DOI)	David-West et al. (2021), Mansour (2021)	2
Economic theory	Le Polain et al. (2018), Marcelin et al. (2021)	2
Institutional theories	Naegels et al. (2018), Ouma et al. (2017)	2
Resource-based View (RBV)	Adomako et al. (20 16); Mohan et al. (2013)	2
Sen's capabilities approach	Kimmitt & Muñoz (2017), Pal et al. (2020)	2
Social Resources Theory	Afawubo et al. (2020), Fang et al. (2014)	2
Technology diffusion theories	Coffie et al. (2021), Peruta (2018)	2
Theory of Planned Behaviour (TPB)	Aisaiti et al. (20 19); Asongu et al. (2021)	2
Theory of Reasonable Action (TRA)	Abbasi et al. (2021), Asongu et al. (2021)	2
Other theories used (one occurrence each)		56

Table 2.13: Publications with theories

2.5 What is Known about Financial Inclusion in Developing Countries?

The concept of financial inclusion is multi-layered, and the corresponding literature in developing countries has been examined along its multiplicity. This section identifies the eight main themes that emerge based on their research objectives, namely: (1) *the state of financial inclusion*, (2) *the determinants and barriers to financial inclusion*, (3) *how financial services afford financial inclusion*, (4) *the categories of financial services,* (5) *the adoption of financial services,* (6) *business model and strategy of providers*, (7)

user behaviour toward financial services, and (8) *the impacts of financial inclusion in developing countries*.

2.5.1 The State of Financial Inclusion

Globally, nearly 1.2 billion adults opened accounts (including mobile money wallets) between 2011 and 2017 (Demirgüç-Kunt et al., 2020). This increased financial inclusion levels from 51% in 2011 to 69% in 2017 (Demirgüç-Kunt and Klapper, 2013; Demirgüç-Kunt et al., 2020). The data equally indicate that 72% of men have an account as opposed to 65% of women.

Across low-income countries, there is a variance in the financial inclusion levels (Fontin and Lin, 2019). For example, financial inclusion indices show poor account ownership in African and Middle Eastern countries compared to higher financial inclusion levels in Asia, Europe, and North America (Wang and Guan, 2017; Ozili, 2020). Nkoa and Song (2020), however, observed a dramatic rise in bank ownership in Africa over the last two decades – from 25% in 2004 to 40% in 2018. Experts attribute this rise to the penetration of mobile banking and mobile money services across African countries (Allen et al., 2014). Still, Klapper and Singer (2014) argued that less than a quarter of adults in Africa have formal accounts, with many of them – especially women – relying on informal methods for saving and loans (Naegels et al., 2018).

Looking at country-level variances, Lotto (2022) found that financial inclusion is lower in Tanzania than in other East African countries, even though it boasts a higher gross domestic product (GDP). Using the World Bank Global Findex data, Fungáčová and

Weill (2015) found that China ranks higher in using formal accounts and savings, but lower in credit use than other BRICS countries. Chen and Jin (2017) also corroborated this result, providing evidence that more people use informal credit than formal credit.

Financial Inclusion Metrics

Selecting the appropriate metrics is central to providing a true reflection of financial inclusion. As a result, two approaches have been suggested in the literature (Cnaan et al., 2012). Earlier financial inclusion studies derive their indices from the number of bank accounts, branches, or service channels (e.g., ATMs) per population to provide a good indication of financial inclusion (Cnaan et al., 2012; Chakravarty and Pal, 2013). This approach, however, downplays other financial services. Besides, the digitisation and disintermediation of financial services lately suggest banks are no longer the sole providers of financial services in developing countries. Hence, using bank account ownership and usage as the key construct is no longer indicative of an accurate financial inclusion measurement. The second approach, through surveys, considers a wide range of financial services besides people's experiences (Cnaan et al., 2012; Demirgüç-Kunt and Klapper, 2013), revealing more accurate depths of financial inclusion. Consequently, studies such as Tram et al. (2021) have introduced mobile money-related indicators to their composite parametric index to provide a nuanced representation of financial inclusion indices.

Financial inclusion studies are often criticised for exogenously selecting arbitrary metrics, using subjective weighting methods, assigning equal or arbitrary weights to

parameters, or applying less scientific rigour as evidenced in several studies relying on non-parametric methods (Pesqué-Cela et al., 2021). By virtue of this, scholars have used different methods to establish the state of financial inclusion in developing countries. Such methods include *econometrics techniques* (Chakravarty and Pal, 2013; Wang and Guan, 2017), *country-level variations* (Demirgüç-Kunt and Klapper, 2013), *demand-side measurements* (Laha and Kuri, 2014; Nandru and Rentala, 2020), *confirmatory factor analysis* (Pesqué-Cela et al., 2021), and *principal component analysis* (Tram et al., 2021). Such scholarly applications have revealed valuable financial inclusion insights including the demand-side dimensions of financial inclusion, namely *physical proximity*, *availability*, *ease of access*, *affordability,* and *usage* (Nandru and Rentala, 2020; Sha'ban et al., 2020; Tram et al., 2021). Such dimensions provide insights into how financial inclusion appeals to the unbankable.

2.5.2 The Determinants and Barriers to Financial Inclusion

Financial inclusion determinants have attracted significant scholarly attention. Although financial inclusion factors appear multi-sided (Kabakova and Plaksenkov, 2018), scholars have distilled these complexities into three primary determinants, namely *social, economic*, *institutional*, and *infrastructural* determinants.

From the social and economic lenses (or socio-economic stance), *income level* (Sarma and Pais, 2011; Aterido et al., 2013; Wang and Guan, 2017; Alhassan et al., 2019b), *employment* (Johnson and Nino-Zarazua, 2011; Ghosh and Vinod, 2017), *education* (Sarma and Pais, 2011; Lee et al., 2017; Yan and Qi, 2021), *financial literacy* (Adomako

et al., 2016; Grohmann et al., 2018; Koomson et al., 2020b; Ababio et al., 2021), *age* (Efobi et al., 2014; Fall et al., 2020), *healthy lives* (Ababio et al., 2021), and *gender* (Johnson and Nino-Zarazua, 2011; Balasubramanian et al., 2019; Lotto, 2022) tend to influence financial inclusion and the usage of financial services. A close analysis of specific studies reveals interesting results. For instance, Bhandare et al. (2021) observed that semi-formal literacy increases the propensity to borrow, while formal literacy increases the tendency to subscribe to insurance services. Similarly, Balliester Reis (2022) suggests that income and employment influence financial inclusion more than gender inequalities. Much as there was no evidence of a gender gap in low and middle-income countries, they found countries with high self-employment rates showed lower financial inclusion levels. Abarcar et al. (2020), however, found no complementarities between financial education and financial access.

Furthermore, caste, culture, family network, and religion can also influence financial inclusion (Cnaan et al., 2012; Aggarwal and Goodell, 2014; Nguyen et al., 2018; Ji, 2020; Fall et al., 2020), as does language (Dar and Sahu, 2022). This position on religion aligns with Ji (2020), who stipulates that high levels of religiosity may hamper financial inclusion. For instance, some religious sects generally avoid the use of interest-based lending. Instead, profit-sharing lending can effectively improve financial inclusion among them (Cameron et al., 2021).

Population density and location are also precursors to financial inclusion. Allen et al. (2014) found population density is more crucial for financial inclusion in Africa than

anywhere else. In the same vein, Johnson and Nino-Zarazua (2011) observed being in a rural area is not associated with access despite empirical results showing that lending in rural communities is more cost-effective than in urban areas (Mia et al.). Across Asian, African, and Middle Eastern countries, a considerably positive correlation exists between social inclusion and financial inclusion (Ozili, 2020). Low levels of social inclusion in Africa and the Middle East can lead to weak account ownership, while the reverse applies to Asian countries. Furthermore, social capital can significantly influence credit access among poor people in rural communities and areas where trust is low (Heikkilä et al., 2016). Trust can, however, supplement weak formal institutions and low levels of education to drive financial inclusion (Xu, 2020).

Besides socioeconomic precursors, other banking and macro-economic factors such as financial aid (Lee et al., 2022b), financial depth, and banking health (Wang and Guan, 2017) can moderate a change in the financial inclusion index of a country, especially emerging economies.

Concerning institutional and infrastructural determinants, institutional quality plays a pivotal role in increasing financial inclusion (Nkoa and Song, 2020; Tran and Dinh, 2021). So do *policies* (Besong et al., 2022; Mishra et al., 2022), *human capital development* (Sarma and Pais, 2011; Ababio et al., 2021)*, urbanisation* and *ICT infrastructure* (Sarma and Pais, 2011; Efobi et al., 2014; Wang and Guan, 2017; Siddiqui and Siddiqui, 2020; Agyekum et al., 2021; Wellalage et al., 2021), and *internet penetration* (Song et al., 2021) can drastically improve the penetration, access, and

usage of financial services. Political factors (Bozkurt et al., 2018) and world governance indicators such as the control of corruption, regulatory quality, rule of law, government effectiveness, and political stability or freedom (Kimmitt and Muñoz, 2017; Alhassan et al., 2019b; Asongu et al., 2021; Avom et al., 2022) as institutional factors can equally influence financial inclusion (Eldomiaty et al., 2020).

Relating to specific types of financial services, several determinants have been suggested. For savings, Reyers (2019) found a positive relationship between financial capability and saving for emergencies, where financial capability is defined as financial self-efficacy and having access to a bank account. In another study, Adetunji and David-West (2019) found that financial literacy determines savings patterns, similar to Cnaan et al. (2021) on digital banking usage. Likewise, Zins and Weill (2016) found that education, income, age, and gender are determinants for both mobile and traditional banking uptake.

Finally, a strand of the literature, although with limited coverage, reveals COVID-19 has shown some effects on financial inclusion, especially among low- and lower-middle-income countries (Mansour, 2022). While this area received little attention, its significance makes it worth mentioning, given the resulting economic shocks that emerged during and after the pandemic.

I. Barriers to Financial Inclusion

The unbankable in developing countries continue to suffer high levels of financial inclusion barriers (Beck and Demirgüç-Kunt, 2008) that impede the access and usage

of financial services. These barriers have been distilled into *socioeconomic*, *supply-side*, *institutional*, or *personal* barriers.

Socioeconomic barriers are perceived as demand-side barriers with social and economic factors that prevent the unbankable from taking up financial services (Sui and Niu, 2018). Such barriers include age, poverty, gender, culture, and distance (Johnson and Nino-Zarazua, 2011; Cnaan et al., 2012; Demirgüç-Kunt and Klapper, 2013; Aggarwal and Goodell, 2014; Kim, 2016; Potnis et al., 2020). Likewise, illiteracy has also been suggested as a significant barrier to financial inclusion (Schuetz and Venkatesh, 2020). Though many studies on the effect of illiteracy have focused on the importance of financial literacy and school education, Yan and Qi (2021) showed that family education is also consequential in driving or inhibiting financial inclusion.

Supply-side barriers are impediments beyond the control of the unbankable and potential users of financial services. Specific barriers include cost, the non-availability, non-accessibility, and unsuitability of financial instruments, insecurity of financial services, and information asymmetry (Johnson and Nino-Zarazua, 2011; Cnaan et al., 2012; Yeung et al., 2017; Sui and Niu, 2018; Schuetz and Venkatesh, 2020; Lotto, 2022). De Mel et al. (2018), however, argue that cost is not a significant barrier to usage. A mismatch between supply and demand for financial services also exists. For example, although micro-finance institutions (MFIs) are proven to be more effective providers of small loans than other formal financial institutions (Menkhoff and Rungruxsirivorn, 2011), the fee structures and banking practices can limit how much and how well they

can lend to their customers (Johnston Jr and Morduch, 2008). This can lead to a substitution effect where informal loans become the preference among the unbankable (Yeung et al., 2017). Unfair treatment by banks has also been suggested as a supply-side barrier (Kamran and Uusitalo, 2019; Agwu, 2021).

Institutional barriers are systemic conditions or situations that deprive the unbankable of access to financial services. Evidence of such barriers provided in the literature includes weak financial systems, inappropriate policies (Anarfo et al., 2020; Singhe and Louche, 2020), and stringent documentation (Demirgüç-Kunt and Klapper, 2013; Klapper and Singer, 2014; Lotto, 2022).

Personal barriers are impediments set up by individuals to discourage the use of financial services. Self-exclusion is the notable personal barrier discussed (Cnaan et al., 2012). Self-exclusion arises when an individual deems formal finance unnecessary or does not consider it (Cnaan et al., 2012). Even though this barrier is equally critical, it has been less explored in financial inclusion literature.

II. Financial Inclusion and Gender Gaps

Knowing that institutional gender equality improves financial access (Chundakkadan and Sasidharan, 2022) is a key reason to promote financial inclusion efforts in developing countries. To support this argument, a growing body of literature has examined the role of gender in financial inclusion (Ghosh and Vinod, 2017). They reveal that women face more exclusion than men while attributing this inequality to the socio-economic, socio-cultural, institutional, legal, and regulatory impediments

affecting the demand and supply of formal finance. For example, in Nigeria, the gender gap in financial inclusion indicators significantly rose from 7% in 2011 to 24% in 2017 (Adegbite and Machethe, 2020). Such gender gaps exist across sub-Saharan Africa (Asiedu et al., 2013; Aterido et al., 2013; Chamboko et al., 2021). A similar disparity exists in India where female-headed households are less likely to access formal finance but more likely to access informal finance than male-headed households (Ghosh and Vinod, 2017).

Generally, there are proven negative effects of financial inclusion gender gaps on income, inequality, food insecurity and poverty (Adegbite and Machethe, 2020), but less impact on household resilience (Sakyi-Nyarko et al., 2022). This becomes more frightening knowing that women tend to face more financial exclusion in countries with significant education gaps between men and women, which in many cases are developing countries. Overall, there is a negative link between financial inclusion and being female in developing countries (Kairiza et al., 2017), even though a higher foreign bank presence can promote competition and reduce gender gaps in financial inclusion in such countries (Morsy, 2020).

Another empirical evidence of gender gaps in financial inclusion is observed in the underrepresentation of female financial service agents across sub-Saharan Africa. This becomes more obvious considering customers prefer agents of like gender (Chamboko et al., 2021), potentially leading to further financial exclusion for women. In spite of this, however, creditors and microfinance institutions sometimes prefer

women borrowers, especially during COVID-19 (Wellalage et al., 2022) and in low-trust countries (Aggarwal et al., 2015). Notwithstanding, women naturally spend such loans on family needs despite the resulting indebtedness and harassment from creditors (Parmanand, 2021). Nonetheless, further evidence suggests a negative association between the gender gap in credit access and financial stability (Perrin and Weill, 2022), suggesting that women generally face more constraints in credit access than men (Asiedu et al., 2013; Seema et al., 2021).

2.5.3 How Financial Services Afford Financial Inclusion

This theme is an emerging track in financial inclusion research. Much as there is a consensus that financial services are the enablers of financial inclusion, only two studies focused on how financial services can afford financial inclusion. Muralidhar et al. (2019) argued that access is essential but insufficient for achieving financial inclusion; hence suggesting '*autonomy*' and '*affordances*' as two additional key factors needed in the financial inclusion discourse. Pal et al. (2020), on the other hand, focused on the affordances of mobile payments. Along with features such as affordability and ease of use, they noticed that mobile payments also afford reflection on past expenses.

2.5.4 The Categories of Financial Services

From the literature reviewed, financial services in developing countries are broadly classified into two – informal and formal finance (see Figure 2.5). Informal finance represents the unregulated and, oftentimes, unregistered services mainly used by the people at the *bottom of the pyramid* – a term to describe the financially vulnerable in

society. Informal financial services include village savings and loan associations (VSLAs) or rotating savings and credit associations (ROSCAs) (Cassidy and Fafchamps, 2020; Sedai et al., 2021), saving groups (Burlando and Canidio, 2017; le Polain et al., 2018), moneylenders (Chai et al., 2019), family and friends (Prina, 2015), and the likes.

Formal finance is a term describing government-regulated financial institutions. These are more likely accessed by better-off individuals and households. (Dimova and Adebowale, 2018). Formal finance can be further divided into five classes: generalised banking services, non-banking services, special-purpose finance, digital and mobile financial services, and decentralised finance.

Generalised banking services are traditional financial services offered by deposit money banks, microfinance institutions, and development financial institutions (Efobi et al., 2014), such as savings and current accounts, credit services, and other banking services. *Non-banking services* are financial services offered by non-bank financial service providers, such as insurance services (Owen and Pereira, 2018). The services covered under *special-purpose finance* include Islamic (micro)finance or banking, an institutional solution designed to stimulate financial inclusion among Muslims (Mertzanis, 2016; Cameron et al., 2021; Abdul Razak and Asutay, 2022), given that their religious principles frown against some practices of conventional financial systems such as charging or earning interest (Imam and Kpodar, 2016).

Digital and mobile financial services are primarily defined as financial services offered via digital and mobile platforms and can be provided by banking and non-banking

institutions (Fernandes et al., 2021). These services include digital or mobile banking, credit, savings, payments and remittances, crowdfunding, and mobile money or wallet (Klapper and Singer, 2014; Fernandes et al., 2021; Kong and Loubere, 2021; Guermond, 2022), that serve as complementary services to meet the demands unmet by traditional banking services (Yue et al., 2021). Finally, *decentralised finance (DeFi)* relates to financial systems that are not driven by centralised financial institutions but by decentralised peer-to-peer networks (Chen and Bellavitis, 2020; Schuetz and Venkatesh, 2020). This helps to reduce intermediaries, monopoly power, and transaction costs. For example, decentralised financial transactions in developing countries are often powered by blockchain technology and can provide digital currencies, savings, lending, transfer, and remittance services to the unbankable (Larios-Hernández, 2017; di Prisco and Strangio, 2021).

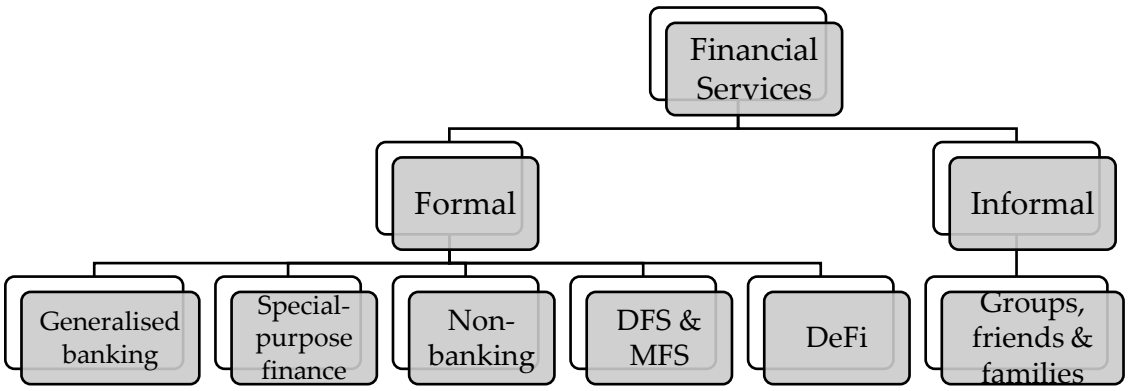

Figure 2.5: Categories of Financial Services in Developing Countries

2.5.5 The Adoption of Financial Services

The adoption of financial services has been a recurring theme in the literature. As a result, many studies have looked at the adoption of financial services as a guide to

advancing financial inclusion in developing countries. Yet, only a few studies have applied theoretical lenses to explain this theme. Theories used include the technology acceptance model (TAM) (Kamdjoug et al., 2021), the unified theory of acceptance and use of technology (UTAUT) (Senyo and Osabutey, 2020), social resources theory (Afawubo et al., 2020), and technology affordances and constraints theory (TACT) (Pal et al., 2021).

Digital financial services play a key role in driving financial inclusion (Fernandes et al., 2021). Due to the proliferation of mobile telephony and technology, developing countries now have access to a broader range of financial services with the potential to transform financial inclusion (Ouma et al., 2017; Fall et al., 2020). For instance, mobile financial services (MFS) can increase the likelihood of saving (Ouma et al., 2017). Likewise, Agwu (2021) used TAM to explore the relationship between technology, financial inclusion, and rural development. Kamdjoug et al. (2021) suggested that utilitarian expectation, hedonic motivation, habit, and perceived privacy significantly influence the intention to adopt m-banking. Wamba et al. (2021) indicated that technology factors such as perceived usefulness, perceived ease of use, fun to use, and external factors like peer influence are strong predictors of intention to adopt an "M-wallet" (a digital wallet application) for financial inclusion. Knowledge, service trust, agents' proximity, and information privacy are additional MFS adoption drivers put forward by researchers (Dziwornu et al., 2018).

As an essential financial instrument, mobile money is capable of improving financial inclusion in developing countries (Peruta, 2018). Its adoption facilitates savings (De Mel et al., 2018) and remittances to friends and families (Koomson et al., 2021), especially during idiosyncratic shocks. These perceived benefits have led to high adoption in developing countries. However, countries such as Nigeria and Uganda still suffer low mobile money adoption among the unbankable due to low customer demand, lack of integration, lack of trust, preference for local savings, and policy short-termism (David-West et al., 2021), as well as high fees and low spatial distribution of agents (Hamdan et al., 2021).

In analysing the adoption factors of mobile money, Lashitew et al. (2019) argue that poor financial access and increasing mobile phone penetration are insufficient to explain mobile money adoption, though institutional and economic factors play a role. However, Senyo and Osabutey (2020) used UTAUT and found that price value, hedonic motivation, social influence, and perceived risk do not affect the intention and use of mobile money. Using social resources theory, Afawubo et al. (2020) found that weak ties of social groups can influence the adoption of mobile money. Pal et al. (2021), however, applied the valence framework and TACT to show that convenience, reflection, and security have different effects on the intention to use.

Coincidentally, adoption and usage are often used interchangeably. Though both attributes differ, they are not independent of each other (Fall et al., 2020). Scholars argue that adoption does not always translate into usage (Lyons et al., 2022), as users

will only engage to the extent that a financial product or service meets their needs (Whittaker and Kruger, 2019). For example, there is a significant difference between the adoption and usage of mobile money among microentrepreneurs (Hamdan et al., 2021), even though its adoption can improve firms' innovation performance (Lorenz and Pommet, 2021). Likewise, in Senegal, women are less likely to adopt mobile banking than men due to their lower education levels, but they have a greater tendency to use the service (Fall et al., 2020).

2.5.6 Business Model & Strategy of Providers

Over the years, the unbankable have been regarded as too risky and unprofitable to serve despite claims that the provision of financial services to them is profitable (Allen et al., 2021). By reducing entry barriers to the provisions of financial services (Assunção, 2013), service channels such as agent banking (Cull et al., 2018) and postal services (d'Alcantara and Gautier, 2013) have become effective service models for driving financial inclusion among the poor. Empirical evidence reveals that providing branchless banking via local agents can significantly improve household savings (Kochar, 2018). Nonetheless, financial services agents (FSAs) in countries such as Nigeria still demonstrate weak business models that inhibit their ability to drive financial inclusion effectively (Iheanachor et al., 2021).

A strand of literature explored FinTech practices, suggesting that the disruption is shaping financial inclusion (Lai and Samers, 2021), with both the incumbents and new entrants scaling financial inclusion via three approaches – *(i) innovative and*

collaborative practices, *(ii) protectionist and equitable practices*, and *(iii) legitimising and sustaining practices* (Senyo et al., 2022). From the evolving financial services ecosystem, credit scoring methods have been developed to improve credit access for the unbankable (Leong et al., 2017) and SMEs (Abbasi et al., 2021). For instance, behavioural signatures from mobile phone data can predict loan defaults (Björkegren and Grissen, 2019). Another FinTech service is mobile money, regarded as both a frugal innovation and a business model that addresses affordability and resource constraints (David-West et al., 2019). Having evolved from a mere payment service, mobile money is being repurposed into new means of value exchange and storage (Maurer, 2012), becoming an integral financial infrastructure in developing countries (Ghosh and O'Neill, 2020).

The role of culture in financial inclusion models within developing countries cannot be downplayed even though this area has evaded research. The dominance of cash transactions as a cultural norm often makes the diffusion of digital channels docile and passive. Hence, it is impractical to eradicate the physical exchange of money in such cash-dependent societies. Wenner et al. (2018) suggest that mobile payment can supplement rather than replace the use of cash, even though formal finance can reduce the preference for cash (Alhassan et al., 2019a). Culture also plays a part in developing economies where it is common to see savings group models where the members use their savings as collateral for loans rather than accumulating capital, as a way to provide security (le Polain et al., 2018).

For the banking industry, greater competition and a broader scope of activities are associated with increased customer account penetration, especially savings and loans (Owen and Pereira, 2018; Marín and Schwabe, 2019; Arráiz et al., 2021). This signals a positive association between market-enabling policies and an increase in account ownership (Girard, 2020). Similarly, MFI competition enhances the availability of credit while reducing loan costs for users (Wang et al., 2021). Through remittance flows, however, banks can expand their branch network, further increasing access to financial services (Inoue and Hamori, 2016a).

2.5.7 The User Behaviour toward Financial Services

It is evident that access to financial services can significantly impact individuals and households. Providing even a simple product like a lotto-linked savings account can substantially improve users' savings behaviour and the amount they save (Dizon and Lybbert, 2021). Similar findings can also be seen in the savings and borrowing habits of agro-pastoral households in Kenya (Bostedt et al., 2021). However, there is often a mismatch between financial products and their intended users in financial inclusion efforts, leading to financial services that do not align with the needs and goals of users (Kostov et al., 2015). Despite this, services like remittances have been shown to increase the tendency to use other formal financial services, such as savings accounts and mobile banking (Ajefu and Ogebe, 2019).

From a standpoint of factors, researchers have found that income, education, marital status, and region within a country are factors that strongly correlate with saving and

borrowing behaviours (Davutyan and Öztürkkal, 2016). Financial and digital literacy as a dual approach can also improve financial behaviour and resilience (Kass-Hanna et al., 2022). Moreover, providing financial incentives can have lasting positive effects on saving behaviour and the material well-being of individuals (Wang et al., 2018).

Mobile money usage is equally influencing user behaviour. Munyegera and Matsumoto (2018) found that using mobile money can increase the tendency to save among user households. Ky et al. (2018) discovered that mobile money usage increases the likelihood of saving for health emergencies, but does not have an effect on saving for a predictable event. Senyo and Osabutey (2020) found that factors such as performance and effort expectancy have an impact on the intention to use and actual usage of mobile money, but social influence and hedonic motivation do not. By and large, Senyo et al. (2021) identified three distinct types of mobile money users: these are *ease-of-use*, *behavioural intention*, and *coverage-price-service* driven users.

2.5.8 The Impact of Financial Inclusion in Developing Countries

Given the numerous benefits of financial inclusion, it is unsurprising that its impacts would have received the most attention from scholars. Studies from developing countries have identified the *socio-economic*, *health*, *agricultural,* and *environmental* impacts of financial inclusion.

The socio-economic impact of financial inclusion is the most sought-after research theme. There is consensus among researchers and experts that financial inclusion can help reduce poverty (Churchill and Marisetty, 2020; Dogan et al., 2022), increase

domestic savings (Emara and Kasa, 2021), promote resource allocation and economic growth (Joia and dos Santos, 2019; Nguyen et al., 2018), and partly offset the economic shocks attributed to COVID-19 (Gutiérrez-Romero and Ahamed, 2021). Besides, it can promote other United Nations sustainable development goals (SDGs), such as improving healthcare and education and reducing inequality (Wang and Guan, 2017; Kara et al., 2021). Moreover, access to a formal account can also augment households' spending on education (Ansong et al., 2021), better education for daughters (Chiapa et al., 2016), household financial capability (Chidambaranathan and Guha, 2020), general consumption (Li et al., 2020; Song et al., 2020), food consumption (Murendo et al., 2021), economic resilience (Pomeroy et al., 2020), as well as influence job creation (Bruhn and Love, 2014; Brixiová et al., 2020).

Although the effects on inequality are pronounced (Dimova and Adebowale, 2018; Joia and dos Santos, 2019; Demir et al., 2020), financial inclusion has a non-homogeneous effect on poverty across low-income and wealthy individuals (Ndlovu and Toerien, 2020). However, a strand of literature found no effect of financial inclusion on poverty (Neaime and Gaysset, 2018). Furthermore, access to financial services also influences the likelihood of committing a crime, with evidence pointing to its capacity to reduce intimate partner violence (Raj et al., 2018) and increase compliance with the law (Gutiérrez and Teshima, 2016).

In terms of macro-economic impacts, higher financial inclusion has been associated with lower bank interest rate spreads (de Moraes et al., 2021), bank profitability (Issaka

Jajah et al., 2022), economic and GDP growth (Inoue and Hamori, 2016b; Kim, 2016; Ali et al., 2021; Emara and El Said, 2021; Van et al., 2021; Kanga et al., 2022; Abdul Karim et al., 2022), improved tourism revenues (Gopalan and Khalid, 2022), financial stability (Neaime and Gaysset, 2018), and mitigating under-financing in education (Kling et al., 2020), especially for low-income regions such as sub-Saharan Africa (Adedokun and Ağa, 2021). Čihák et al. (2020), however, noticed a negative correlation with financial stability, given the effect on bank stability, for example, is conditioned on other business and governance indicators (Marcelin et al., 2022). Similarly, reverse causalities have been observed between financial inclusion and financial sector development (Anarfo et al., 2019), along with remittances and economic development (Fromentin, 2018).

Inclusive finance equally fosters the creation of businesses (Charfeddine and Zaouali, 2022), entrepreneurial practices (Liu et al., 2021a; Liu et al., 2021b), female entrepreneurship (Mahmood et al., 2014), and firm performance (Lee et al., 2020; Fowowe, 2017), as well as their access to credit (Léon and Zins, 2020). It has also been found to have a non-monotonic effect on a firm's growth (Nizam et al., 2021).

Financial inclusion can also increase agricultural productivity (Hu et al., 2021). For instance, formal savings can lead to agricultural investments, increased crop production (Flory, 2018), and improved risk-coping ability for farmers (Han et al., 2019). Additionally, on a small scale, Islamic banking positively affects economic growth

(Imam and Kpodar, 2016) and the well-being of customers (Abdul Razak and Asutay, 2022).

Drawing on the limited research on the health impact of financial inclusion, there is evidence that access to financial services can increase the use of healthcare services (Ahmed and Cowan, 2021; Kara et al., 2021). A small number of studies also suggest that financial inclusion can have positive effects on the environment. For instance, Renzhi and Baek (2020) observed an inverted U-shape relationship between financial inclusion and CO2 emissions, similar to the findings of Shahbaz et al. (2022). Besides, access to finance tends to decrease energy poverty (Koomson and Danquah, 2021).

Dangers of Financial Inclusion

Although there are many benefits to financial inclusion, some scholars have cautioned that it can also have negative consequences (Kling et al., 2020). While this theme has received little attention in the literature, it suggests that there is an imbalance in research on the subject.

Financial access can create imbalances of power and lead to debt traps (Diniz et al., 2012; Torkelson, 2020; Yue et al., 2021), especially through the use of payment and credit services. In the same vein, Guermond (2022) argues that digital financial inclusion has the potential to disrupt the social reproduction efforts of migrants and remittance beneficiaries. Other critics argue that mobile money could be used for tax exploitation if not regulated properly (Boamah and Murshid, 2019). Given these potential risks, scholars have called for consumer protection to be operationalised in

financial service delivery (Marini et al., 2017; Klapper and Singer, 2017) to protect customers from data abuse and fraudulent practices (Hua and Huang, 2021). Strong cybersecurity controls can also minimise the effects of cyber threats on the provision of financial services (Khan et al., 2021).

2.6 The Unknowns and Future Research Directions

This paper reveals that recent empirical, conceptual, and theoretical research has strengthened our understanding of financial inclusion in developing countries. Nonetheless, considerable gaps remain. The themes like the adoption of financial services and the socioeconomic impacts of financial inclusion are drawing more attention from scholars, leaving areas such as user behaviour toward financial services, the influence of culture on financial inclusion, affordances of financial inclusion, and the effectiveness of financial inclusion policies understudied (Beck and Demirgüç-Kunt, 2008; Muralidhar et al., 2019). Particular attention needs to be paid to these themes.

Another noticeable gap in financial inclusion research is the lack of insight into digital savings, blockchain, and crowdfunding as they apply to developing countries, given their perceived potency to stimulate financial inclusion among the unbankable. More research efforts are evident in traditional banks and financial institutions, payments, mobile money, and credit services. This incomplete coverage represents an imbalance in research efforts which limits the complete understanding of the financial inclusion landscape, suggesting a new research direction for scholars. While there are suggestive claims of the transformative power of blockchain and crowdfunding to radically

address financial inclusion by providing opportunities for remittances and credit, there is still limited proof of their potential to serve the unbankable in developing countries (Schuetz and Venkatesh, 2020). Besides, there is a misalignment between these decentralized business offerings and the ability of disadvantaged individuals to use such technologies due to the prevalent digital divide and their low socio-economic status (di Prisco and Strangio, 2021). Digital savings, on the other hand, can address the limitations of traditional savings and accelerate financial inclusion without the issues of regulation, transparency, scalability, immutability, and security associated with blockchain (di Prisco and Strangio, 2021). Digital savings can also provide more resilience than mobile money (Sakyi-Nyarko et al., 2022). As a new research pathway (World Bank, 2019), the suitability of digital savings to convey financial services to the unbankable makes it research-worthy.

Akin to other understudied areas, the study reveals the lack of financial inclusion studies in information systems, suggesting more effort is needed in this domain to address the exclusion problems in developing countries. This validates previous studies such as Lagna and Ravishankar (2022) that identified the lack of research engagement by IS scholarship on the potential of newer financial services in driving financial inclusion among the unbankable. We echo Lagna and Ravishankar (2022) to call for more IS research on financial inclusion in developing countries. In addition, areas such as the digital artefacts of financial inclusion, supply-side views of financial services, providers' business strategies, and socio-technical issues of financial services are potential IS research directions.

The application of theories is also limited among the reviewed studies. Given the importance of theoretical frameworks to research scholarship, the lack thereof weakens research by relying more on descriptive and conceptual techniques. Information systems researchers often rely heavily on adoption and usage theories such as the technology acceptance model (TAM) and the unified theory of acceptance and use of technology (UTAUT/UTAUT2), which limits the understanding of the domain. However, other theories can provide fresh insights into the broader context of financial inclusion research in developing countries. For instance, innovation resistance theories can explain, in part, the resistance of the unbankable to digital financial services. Behavioural decision theory can be applied to analyse the decision-making tendencies and patterns of the unbankable. Likewise, the theory of affordances can be used to explain the nature of digital financial services (DFS) and their relationship with users, particularly how users utilise DFS to achieve their daily goals, irrespective of the designers' intent. We, therefore, call for more theory(ies)-based research on financial inclusion in developing countries, especially within the IS community.

2.7 Conclusions

Financial inclusion is an ongoing discourse among researchers and practitioners as it plays a crucial role in achieving, among other outcomes, the UN SDGs, including poverty alleviation, reducing hunger and inequality, and improving education and healthcare. Based on existing scholarly evidence, we identified eight themes that show

the current research directions in financial inclusion. The *state of financial inclusion* in developing countries is less than optimal, leaving the unbankable vulnerable to different types of shocks. The *determinants of financial inclusion* inform our understanding that social, economic, and institutional factors may predict financial inclusion. It equally underscores the urgent need to address financial inclusion barriers facing the unbankable. The *categories of financial services in developing countries* highlight both formal and informal services discussed in research scholarship. The *adoption of financial services* attempts to separate adoption from usage while revealing the major adoption drivers of financial services. *Business model and strategy* discuss how providers attempt to serve the unbankable through various operating techniques. The *user behaviour toward financial services* and *how financial services afford financial inclusion* uncover how the unbankable are using financial services to achieve their financial goals while discovering new affordances. Finally, the *impact of financial inclusion* suggests that socio-economic impact is the most researched area in financial inclusion literature. It also reveals possible financial risks of being financially included.

We believe our research can potentially inform several key contributions to theory and practice. First, our study advances knowledge on the breadth of FI literature in developing countries by identifying its existing and overlooked themes. The understudied research areas provide opportunities for further research. Second, by using a systematic literature review approach, this comprehensive review provides up-to-date knowledge on financial inclusion given the rapid development and

technological influence of the field. Third, the study reveals the lack of information systems scholarship and theoretical applications that can weaken the body of work relying on descriptive techniques, thereby limiting the understanding of the domain. Practically, the research insights into the financial services landscape can provide critical understanding to support policymakers and providers for better financial inclusion provisioning. Finally, the research contributes to the discussion of shifting from traditional finance to digital solutions by demonstrating their potential to address longstanding barriers.

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3. Article II: Digital Savings for the Unbankable: Discrepancy of the Promise of Financial Inclusion and Digital Savings Policies in Africa

Financial inclusion has been a topic of interest for scholars and industry experts for some time. Much as researchers agree that financial inclusion is a major pathway for the unbankable to achieve financial health, evidence suggests the uptake of digital savings among the unbankable is significantly lower than other digital financial products, such as digital payments. Previous efforts to understand this relatively low digital savings uptake have primarily focused on demand and supply perspectives. This study supplements the current endeavours by examining the issue from the policy perspective. The authors scrutinise the policies in all 54 countries in Africa to understand the extent to which digital savings are considered a tool for financial inclusion. The findings reveal that, in general, digital savings are not a priority in the financial inclusion efforts of African policymakers. The study equally identifies the typology of digital savings policies in Africa, revealing three prevailing variants: (1) Traditional finance-centric, (2) Electronic money-centric, and (3) Electronic money with digital savings features. These findings have implications for countries seeking to address their financial inclusion gaps.

3.1 Introduction

Financial inclusion, defined as the "*availability and equality of opportunities to access financial services*" (Nanda and Kaur, 2016), has been a focus of conceptual and empirical research for many years due to its importance in promoting inclusive and equitable financial development (Nanda and Kaur, 2016). By providing a full suite of financial services, including savings, financial inclusion provides a sustainable pathway for the poor to access formal finance and achieve economic development (Arun and Kamath, 2015; World Bank, 2019).

Savings instruments serve as a *building block* of financial services for the poor, considering that during economic shocks, they can only spend what they save (Hoos, 2010). To this extent, cost-saving digital methods have been extended to savings instruments to address the barriers associated with financial inclusion (World Bank, 2019). With digital savings, individuals and households can establish an economic footprint, maintain consumption smoothing, generate a buffer for emergencies, and achieve financial independence (Finney and Davies, 2011; Karlan et al., 2014; Mauldin et al., 2016; Barry, 2018). However, much as studies have identified savings as a tool for the unbankable to achieve financial health (Hoos, 2010; Karlan et al., 2014), statistics show the uptake of digital savings remains generally low, particularly among the underserved low-income population referred to as *the unbankable* (Demirgüç-Kunt et al., 2017).

The extant research on digital savings examines these gaps from the demand and supply perspectives. A demand-side argument focuses on poverty, low financial literacy, social norms, knowledge gap, and disinterest in savings (Karlan et al., 2014; Lwanga Mayanja and Adong, 2016; Dezso et al., 2018; Somville and Vandewalle, 2015). A supply-side view indicates that digital savings products are limited and mostly tailored to people with bank accounts (Sangaré, 2015; Nan, 2018; Nan and Markus, 2019; Awosika and Zhu, 2020). However, these demand and supply perspectives only provide surface-level analyses (Bansal, 2012; Kempson and Collard, 2012). As the nature and scope of demand and supply activities are defined and constrained by the

underlying policies (Ostrom, 2007), it is imperative to examine digital savings from the policy perspective. Deviating from the existing literature, our study presents an evidence base and a holistic view of the digital savings policy landscape in Africa.

Policies are mechanisms that can guide the improvement of the availability and accessibility of digital savings (World Bank, 2019) and can also bring about social change and support the achievement of desirable economic conditions. However, the current lack of research on digital savings policy (see Appendix A) makes it difficult for researchers and practitioners to fully understand the barriers to the uptake of digital savings and how best to address this issue. In reality, digital savings is relatively underrepresented in the extant financial inclusion literature. Rather than focusing on digital savings, most research has concentrated on digital payments and electronic money[2] services, as shown in Appendix A. The few research attempts on the policy perspective of digital savings have mainly come from industry and World Bank research. These industry-focused publications are often anecdotal submissions (Anarfo et al., 2020). We argue that greater attention to digital savings in research and practice is necessary for maximising the benefits of financial inclusion. This study advances digital savings, which is a new research direction, by addressing the following research questions: (1) *To what extent does Africa prioritise digital savings in its financial inclusion effort and policies?* (2) *What are the prevailing digital savings policy approaches in Africa?*

[2] Electronic money is often used interchangeably with mobile money and e-money.

We chose Africa as our research context as it represents a major Financial Technology (FinTech) hub that has experienced both success and challenges in financial inclusion, in addition to challenges such as economic inequality, poor infrastructure, and governance issues common to developing countries in the *Global South* (Mishra et al., 2022; Osei-Bryson et al., 2022). While Africa is well known for the phenomenal success of *M-Pesa* – an electronic money service (di Castri, 2013; McBride and Liyala, 2021), it is witnessing inconsistent and uneven progress in other financial services such as digital savings (World Bank, 2019). Despite efforts by the World Bank and other development agencies, as well as African governments' commitments to promoting financial inclusion through social agendas and campaigns, such as membership of the Alliance for Financial Inclusion (AFI)[3] and the signing of the Maya Declaration 2011[4] (Alliance for Financial Inclusion, 2021), access and usage of financial services, particularly digital savings, remains low in Africa (Demirgüç-Kunt et al., 2017). This is reflected in the evidence that Africa has the lowest savings rate globally, with only 15% of adults saving in formal financial institutions compared to the global average of 27% (Demirgüç-Kunt et al., 2017). The poorest African households are even less likely to save formally (Demirgüç-Kunt et al., 2017). These statistics suggest that the demand and supply perspectives have not fully addressed the low adoption of digital savings among the unbankable, therefore a policy perspective is needed to investigate this issue.

[3] A list of member institutions can be found at www.afi-global.org/members/

4 The Maya Declaration 2011 is a global commitment to drive responsible and sustainable financial inclusion with a goal to ensure poverty reduction and financial stability is achievable for all.

We analysed policy documents available online from government repositories in all 54 African countries. Our findings show that many neighbouring countries within each region of Africa (North, South, Central, East, and West) have similar policies. Our findings also reveal the dominant typology of digital savings in Africa based on their corresponding digital financial services policies.

Our research makes three key contributions to the limited body of knowledge on digital savings. Firstly, as the pioneer study to examine the policy perspective within the digital savings domain, our analysis identifies previously unrecognised systemic issues in financial inclusion research in Africa. We also provide a holistic view and an evidence base of the policy landscape in Africa as it relates to digital savings. Secondly, our research initiates discussions within the financial inclusion research community by unveiling the typology of digital savings in Africa that can serve as a template for future research on financial inclusion in Africa and other developing countries. Thirdly, our analysis significantly contributes to addressing policy-related barriers to financial inclusion. Practically, our research prescribes a shift in mindset and recommends policy directions that could advance digital savings throughout the continent toward realising the promise of financial inclusion. We hope that this paper will stimulate dialogue among regulators, financial service providers, scholars, and international institutions like the World Bank.

The next section of this paper presents existing research on financial inclusion and digital savings, highlighting the gaps in current research. We then describe our

methodology, including data collection and analysis, before presenting and discussing the findings. Finally, we summarise our research contributions and policy implications before concluding the paper.

3.2 Digital Savings and Financial Inclusion

Financial inclusion has been a focus of research and debate among scholars and practitioners for decades, as it is perceived as a way to drive economic and social growth for all members of society (Kabakova and Plaksenkov, 2018), particularly vulnerable groups such as the unbankable (Center for Financial Inclusion, 2018). While there is no one-size-fits-all definition of financial inclusion, the literature suggests that it involves (1) *uniform access and availability of financial services* (Kabakova and Plaksenkov, 2018; Kim et al., 2018a), (2) *a full suite of financial services* (Arun and Kamath, 2015), (3) *the elimination of barriers that prevent the disadvantaged individuals from accessing formal finance* (Chakravarty and Pal, 2013) (4) *the adoption and usage of financial products* (Sarma and Pais, 2011; Allen et al., 2016; Morgan and Long, 2020), (5) *affordable and high-quality financial services* (Bayero, 2015), and (6) *the potential for economic benefits and improved wellbeing* (Bruhn and Love, 2014; Kabakova and Plaksenkov, 2018; Koomson et al., 2020a; Iheanachor et al., 2021).

Previous research on financial inclusion has examined the concept from different paradigms, including its *nature and definition*, *determinants* (Asuming et al., 2019; Zins and Weill, 2016), *metrics and indicators* (Demirgüç-Kunt et al., 2017; Pesqué-Cela et al., 2021), and *socio-economic impact* (Churchill and Marisetty, 2020). Some studies

have focused on specific elements of financial inclusion, such as *digital/mobile payments* or *microcredit*, while others have used different dimensions to examine or track financial inclusion, such as *country-level* or *cross-country* analysis (Nanda and Kaur, 2016). Financial inclusion is a multidisciplinary concept, and the theoretical foundations of many studies in the field have come from a variety of subject areas.

Although policy efforts in financial inclusion studies remain limited, evidence from empirical research points to inclusive financial systems as a key to unlocking immense socio-economic benefits for individuals and the states. Empirical research has demonstrated positive correlations between access to financial services and *poverty reduction* (Mushtaq and Bruneau, 2019; Churchill and Marisetty, 2020; N'Dri and Kakinaka, 2020; Koomson et al., 2020a), *asset accumulation* (Fomum and Jesse, 2017), *economic activities of agricultural households* (Fowowe, 2020), *financial resilience* (Hussain et al., 2019), *financial wellbeing* (Nandru et al., 2021), *reduced income inequality* (Ouma et al., 2017; Neaime and Gaysset, 2018), and *improved consumption* (Munyegera and Matsumoto, 2016). Despite various efforts, Africa continues to experience high levels of financial exclusion, as evidenced by empirical research.

Mobile money has been widely promoted as a solution to this issue, with numerous studies focusing on its potential as the primary tool for addressing financial exclusion. An analysis of studies on digital financial services (see Appendix A) shows mobile money specifically and digital payments, in general, dominating the financial inclusion discourse. However, it is important to recognise that the concept of financial inclusion

extends beyond digital payments (Arun and Kamath, 2015). In effect, the Center for Financial Inclusion (2018) defines it as encompassing a range of financial services, including digital savings, which should not be downplayed in the pursuit of financial inclusion in Africa.

Unlike financial inclusion, digital savings have not been conceptualised in the literature, and there is some ambiguity surrounding its definition. Some scholars view it as any form of savings facilitated via digital means (Moenjak et al., 2020). Others have a more specific interpretation, referring to digital savings as digitised savings accounts provided by traditional banks (Serfiyani, 2019) or digital wallets issued by challenger banks or other FinTech firms. The most comprehensive definition comes from World Bank (2019) which cites digital savings as "*digital interest-bearing deposit accounts or wallets offered by licensed deposit and non-deposit-taking institutions"*, where deposit-taking institutions include banks, micro-finance institutions (MFIs), and other full-fledged financial institutions, and non-deposit-taking institutions are new providers in the deployment of digital savings models such as mobile network operators (MNOs), non-bank electronic money issuers (NBEIs), payment providers, technology firms, FinTech start-ups, and others that are licensed to offer select financial services. In this study, we adopt a broad definition of digital savings as *savings instruments provided via digital means to enable individuals, particularly the unbankable, to save conveniently and securely in an account or wallet and oftentimes earn interest*. This includes options such as digitised savings accounts or wallets offered by banks and non-bank financial providers.

Financial inclusion is a critical tool for the unbankable to gain financial freedom (Buckley et al., 2019) and access to digital savings can accelerate this in several ways. First, it can establish a cheaper, more convenient, and more accessible means of saving money, as individuals can access savings instruments through their mobile devices regardless of their location (World Bank, 2019). Second, digital savings can expand the range of financial services available beyond the traditional banking network, serving as a foundation for other services such as credit, insurance, and investment. Third, it enables individuals to establish their financial footprints, offering providers a rich source of data to better assess customers' financial capability and creditworthiness. For example, instead of credit scoring, savings behaviour can be an indicator of financial stability and risk profile. Finally, the emergence of new players offering digital savings can stimulate market competition, potentially leading to higher savings interest rates for customers.

3.2.1 Digital Savings from Literature

Digital savings is a relatively new area of research in the field of financial inclusion. While there has been some exploration of this topic, much of the existing research has focused on either the demand or supply side of the issue. Demand-side research suggests that access to digital savings can help the unbankable achieve financial goals such as managing cash flows, creating an emergency fund, accessing credit, generating investments, and planning for the future (Karlan et al., 2014). However, it also indicates

that barriers such as transaction costs, poverty, financial illiteracy, and distrust of financial institutions can inhibit the adoption of digital savings (De Mel et al., 2018).

On the supply side, research has identified the types of providers and the offerings available in the digital savings space, including channels such as Short Message Service (SMS), Unstructured Supplementary Service Data (USSD), agent terminals, and mobile apps (World Bank, 2019). It has also identified impediments such as product mismatch, poor understanding of customer needs and behaviour, and institutional constraints, that trigger market failures (Sangaré, 2015; Robinson, 2018). Other studies have examined the economic impact of digital savings, finding positive downstream effects on financial decisions and access to credit (Aggarwal et al., 2020b) and the overall positive impacts on individuals (Demombynes and Thegeya, 2012; Bastian et al., 2018). Taken together, these studies suggest that digital savings are a key driver of financial inclusion.

Efforts to increase the uptake and usage of digital savings among the unbankable, which have taken both demand- and supply-side approaches, have failed to unlock the potential benefits described in the literature. A significant factor that has been overlooked in previous research is the critical role of policies in advancing digital savings, as they can influence both the demand and supply sides in achieving financial inclusion. Nonetheless, policies have the potential to stifle, support, or even catalyse rapid innovations (Plaitakis and di Castri, 2018). As a result, in the absence of substantive digital savings products, many unbankable individuals have turned to

mobile money as a substitute for meeting their short-term savings needs, despite the understanding that mobile money is primarily designed as a payments service and may not fully meet their savings requirements (Aker and Wilson, 2013; Batista and Vicente, 2020; Nan et al., 2020). It is therefore crucial to examine digital savings from a policy perspective in order to better understand how to increase the availability and adoption of these financial solutions.

3.2.2 Research Gap: Digital Savings from the Policy Perspective

There is a clear need for digital savings to be prioritised within the financial inclusion agenda, as demonstrated by various studies, and this can be driven by policies. For example, Serrao et al. (2013) argued that effective policies are necessary to stimulate financial service delivery. Similarly, Robinson (2018) emphasised the potential of policies to promote digital savings. These policies can shape the scale, availability, and accessibility of digital savings instruments., as well as enhance the reach and long-term impact of financial inclusion for individuals who may not have access to traditional banking services.

Despite the centrality of policies to advancing financial inclusion, research on the policy perspective is limited (Kodongo, 2018). Previous studies have largely focused on policies related to traditional banks (Demirgüç-Kunt et al., 2008), financial literacy, or roundtable discussions (Arun and Kamath, 2015), rather than a robust analysis of the alignment or misalignment between government commitments and financial inclusion policy implementation. de Koker and Jentzsch (2013) pointed out that policies are

often implemented without adequate research. Additionally, policymakers often face complex problems that require different methods of analysis in the context of national economic development strategy, (Samoilenko and Osei-Bryson, 2021). Regardless of the calls for research that would help policymakers more effectively use policies to drive financial inclusion (Anarfo et al., 2020), there is a lack of studies on digital savings and how policies could address the gaps in this area.

For policymakers in emerging economies such as Africa, it is crucial to have a better understanding of the policy effects on financial inclusion (Anarfo et al., 2020). Besides, a systematic, data-driven approach is needed for decision-making, rather than *ad hoc* attempts (Samoilenko and Osei-Bryson, 2021). The focus of our research on digital savings policies in Africa hinges on this argument. In Africa, financial exclusion has been a persistent challenge on the continent due to the large unbankable population. Given that financial inclusion is a crucial enabler[5] of sustainable development goals (SDGs), many African governments have positioned financial inclusion at the forefront of their policy agendas (Arun and Kamath, 2015), while experimenting with different approaches to achieve this goal. However, as Kodongo (2018) emphasised, the policy approach in developing economies like Africa is often based on speculation rather than a systematic analysis (Godinho et al., 2015), which may hamper the success of financial inclusion efforts (Kodongo, 2018).

[5] https://www.uncdf.org/financial-inclusion-and-the-sdgs

Without examining the policy landscape, it will be difficult to determine the actual policy implications and achieve meaningful progress in financial inclusion (World Bank, 2019). Against this backdrop of demand and supply-side limitations, this paper attempts to identify any challenges to financial inclusion that may be related to policies and to understand how policies can either support or hinder the development of digital savings. This understanding is crucial for policymakers who are striving to achieve financial inclusion.

3.3 Methodology

Given the limited research on this topic, this study employs a qualitative research method underpinned by an inductive approach, using publicly available policy data to analyse the policy perspective of digital savings in Africa. As the source of the most credible, relevant, and exhaustive information on the policy approaches and directives from government institutions and policymakers across Africa, using these secondary data sources offers several benefits for this research. First, it ensures consistency in data collection as the data is gathered consistently and similarly from each representative sample (Lind et al., 2012). Second, relying on secondary data as the predominant data source can enhance research integrity by reducing the bias associated with other empirical methods such as interviews (Rabinovich and Cheon, 2011). Finally, secondary data requires fewer resource points but provides a larger and more diverse volume of data than other techniques, allowing a greater opportunity for validation and replication (Rabinovich and Cheon, 2011).

The study sample consists of policy documents from 54 African countries[6] (as of June 2020), which were sourced from multiple online repositories such as the websites of each country's central bank, finance ministries and policy departments, and other relevant sources. We also used a search engine to identify possible document sources from the likes of the *World Bank*, *Alliance for Financial Inclusion (AFI),* and other international organisations with a focus on financial inclusion in developing countries (see Table 3.1). The sample is based on literature and the availability of data as Africa is regarded as the epicentre of financial exclusion, represented by the five regions of Africa as classified by the African Union. Assessing these documents directly from credible web sources on government policies ensures the researchers can validate the integrity of the information and vouch for the validity of the findings (Rabinovich and Cheon, 2011). Six countries[7] had documents that were illegible and were therefore excluded from the data analysis. Excluding these affected documents did not impact the findings in any considerable shape or form.

Documents	Number of Documents
Government Policy documents	91 documents
International Institutions' documents	23 documents

Table 3.1: Policy Data Sources

[6] The 54 African countries include nine from Central Africa, fourteen from East Africa, six from North Africa, ten from Southern Africa, and fifteen from West Africa. This categorisation follows the country profiles of member states on the African Union website. The only member state omitted, the *Sahrawi Arab Democratic Republic*, is a non-self-governing territory.

[7] Burundi, Djibouti, Madagascar, Morocco, Mozambique & Sao Tome.

3.3.1 Data Analysis

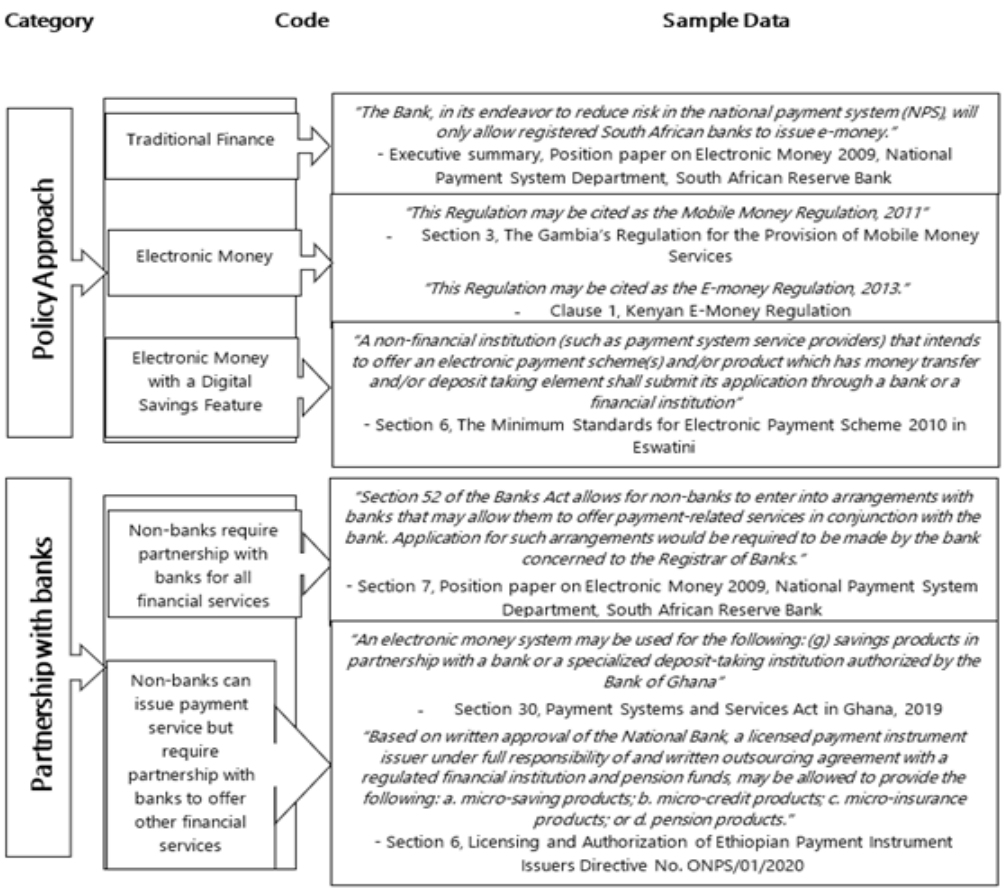
The researchers applied content analysis to understand the policy directions of digital savings in Africa. This technique allows for the systematic organisation and analysis of a large amount of textual data, enabling the derivation of meaningful conclusions (Bengtsson, 2016; Erlingsson and Brysiewicz, 2017). Following Erlingsson and Brysiewicz (2017), the process involves reading the policy documents to understand the contexts and terminology. The texts were then broken down into smaller units, summarised, labelled, and compressed into *codes*, which are labels that describe the units (Erlingsson and Brysiewicz, 2017). The coding process was repeated multiple times to ensure a high level of reliability. Comparing the coded data with the original texts helps to maintain the original contexts and perspectives of the data (Bengtsson, 2016).

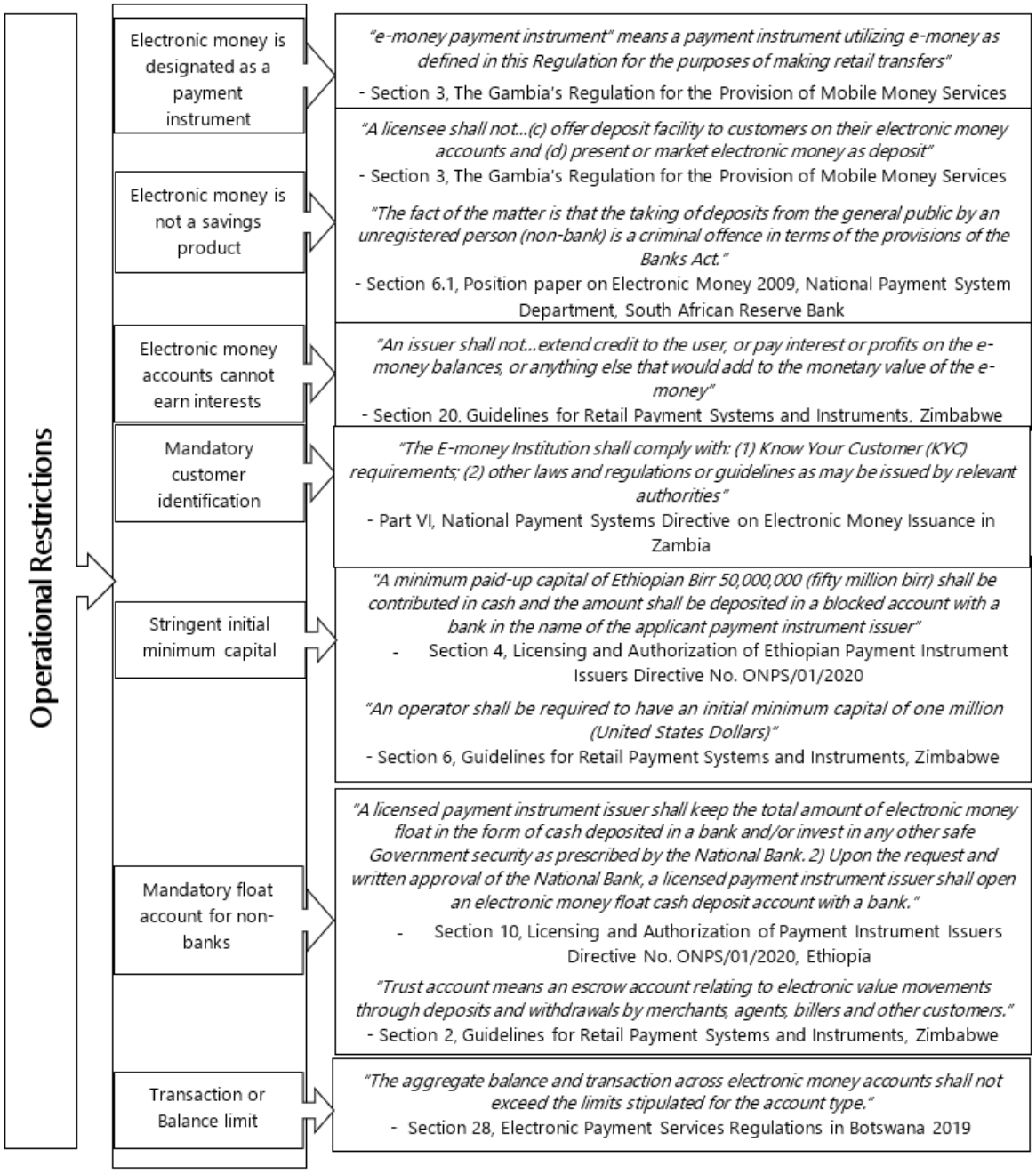
We triangulated the data from the government policy documents with 23 publications from international organisations such as the World Bank and the Alliance for Financial Inclusion (AFI). This approach led to identifying the policy boundaries and scope, while increasing the confidence and reliability of the findings (Heale and Forbes, 2013) by ascertaining the consistency of information from different data sources. For example, we triangulated the regulatory framework for digital financial services in Cote D'Ivoire and the West African Economic and Monetary Union (WAEMU), published by the Consultative Group to Assist the Poor (CGAP), with data from the policy documents of the West African regional body.

During the categorisation stage, codes were condensed into categories, which are collections of related codes that are similar in content or context (Erlingsson and Brysiewicz, 2017) and represent the highest level of abstraction. The researcher ensured that the codes were *internally homogeneous* within each category and *externally heterogeneous* across the identified categories, meaning that no data belonged to two categories.

Finally, two research team members analysed the data independently using Paré et al. (2016) and Erlingsson and Brysiewicz (2017) as guides. The results of the analysis were compared for agreement, and any discrepancies were addressed during follow-up meetings. For example, we encountered a disagreement about how to classify the policy in Kenya, as its written policy appears to conflict with the country's digital savings products. While the electronic money regulation in Kenya excludes non-banks from offering digital savings, non-bank electronic money issuers (NBEIs) are partnering with banks to provide specialised digital savings products that are tailored to the needs of the unbankable, where users only need to have a SIM card to open an account and conduct transactions, and no account opening documentation or minimum balance is required. Interest is also paid on customer account balances. In a developing country, it is plausible that digital innovation is ahead of the policy. Therefore, we decided to classify Kenya based on its digital savings product, and we also examined the digital savings products in other African countries to check for similar discrepancies. We discovered a similar disparity in Kenya's neighbouring country, Tanzania. Despite the Electronic Money Regulation in Tanzania mandating non-banks to offer digital savings

in partnership with banks, the current digital savings products in the country are tailored for the unbankable, similar to those in Kenya. Accordingly, we classified Tanzania according to its digital savings products. While reviewing Tanzania's policy documents, we discovered the driver of such practice from Tanzania's Digital Credit Regulation. Erlingsson and Brysiewicz (2017) referred to this data analysis approach as *researcher triangulation*, a crucial component for achieving research validity in qualitative data analysis. Figure 3.1 and Table 3.2 present the categories, related codes, and sample data.




Operational Restrictions
Electronic money is designated as a payment instrument
"e-money payment instrument" means a payment instrument utilizing e-money as defined in this Regulation for the purposes of making retail transfers"
- Section 3, The Gambia's Regulation for the Provision of Mobile Money Services
Electronic money is not a savings product
"A licensee shall not...(c) offer deposit facility to customers on their electronic money accounts and (d) present or market electronic money as deposit"
- Section 3, The Gambia's Regulation for the Provision of Mobile Money Services
"The fact of the matter is that the taking of deposits from the general public by an unregistered person (non-bank) is a criminal offence in terms of the provisions of the Banks Act."
- Section 6.1, Position paper on Electronic Money 2009, National Payment System Department, South African Reserve Bank
Electronic money accounts cannot earn interests
"An issuer shall not...extend credit to the user, or pay interest or profits on the e-money balances, or anything else that would add to the monetary value of the e-money"
- Section 20, Guidelines for Retail Payment Systems and Instruments, Zimbabwe
Mandatory customer identification
"The E-money Institution shall comply with: (1) Know Your Customer (KYC) requirements; (2) other laws and regulations or guidelines as may be issued by relevant authorities"
- Part VI, National Payment Systems Directive on Electronic Money Issuance in Zambia
Stringent initial minimum capital
"A minimum paid-up capital of Ethiopian Birr 50,000,000 (fifty million birr) shall be contributed in cash and the amount shall be deposited in a blocked account with a bank in the name of the applicant payment instrument issuer"
- Section 4, Licensing and Authorization of Ethiopian Payment Instrument Issuers Directive No. ONPS/01/2020
"An operator shall be required to have an initial minimum capital of one million (United States Dollars)"
- Section 6, Guidelines for Retail Payment Systems and Instruments, Zimbabwe
Mandatory float account for non-banks
"A licensed payment instrument issuer shall keep the total amount of electronic money float in the form of cash deposited in a bank and/or invest in any other safe Government security as prescribed by the National Bank. 2) Upon the request and written approval of the National Bank, a licensed payment instrument issuer shall open an electronic money float cash deposit account with a bank."
- Section 10, Licensing and Authorization of Payment Instrument Issuers Directive No. ONPS/01/2020, Ethiopia
"Trust account means an escrow account relating to electronic value movements through deposits and withdrawals by merchants, agents, billers and other customers."
- Section 2, Guidelines for Retail Payment Systems and Instruments, Zimbabwe
Transaction or Balance limit
"The aggregate balance and transaction across electronic money accounts shall not exceed the limits stipulated for the account type."
- Section 28, Electronic Payment Services Regulations in Botswana 2019

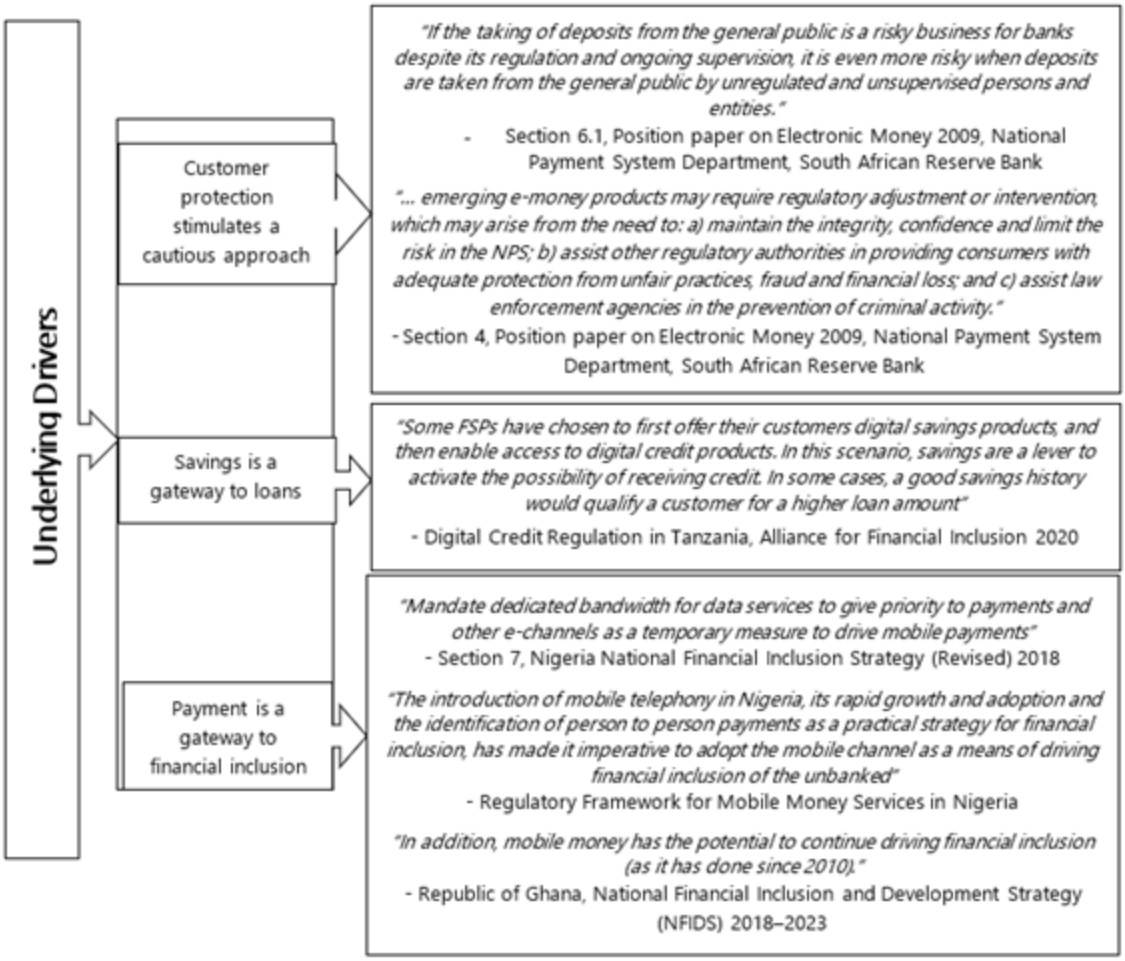


Figure 3.1: Coding Examples

Category	Code	Sample Data
Policy Approach	Traditional Finance	*"The Bank, in its endeavor to reduce risk in the national payment system (NPS), will only allow registered South African banks to issue e-money."* - Executive summary, Position paper on Electronic Money 2009, National Payment System Department, South African Reserve Bank
	Electronic Money	*"This Regulation may be cited as the Mobile Money Regulation, 2011."* - Section 3, The Gambia's Regulation for the Provision of Mobile Money Services *"This Regulation may be cited as the E-money Regulation, 2013."* - Clause 1, Kenyan E-Money Regulation
	Electronic Money with a Digital Savings Feature	*"A non-financial institution (such as payment system service providers) that intends to offer an electronic payment scheme(s) and/or product*

		which has money transfer and/or deposit taking element shall submit its application through a bank or a financial institution" Section 6, The Minimum Standards for Electronic Payment Scheme 2010 in Eswatini
Partnership with banks	Non-banks require partnerships with banks for all financial services	*"Section 52 of the Banks Act allows for non-banks to enter into arrangements with banks that may allow them to offer payment-related services in conjunction with the bank. Application for such arrangements would be required to be made by the bank concerned to the Registrar of Banks."* - Section 7, Position paper on Electronic Money 2009, National Payment System Department, South African Reserve Bank
	Non-banks can issue payment service but require partnerships with banks to offer other financial services	*"An electronic money system may be used for the following: (g) savings products in partnership with a bank or a specialized deposit-taking institution authorized by the Bank of Ghana"* - Section 30, Payment Systems and Services Act in Ghana, 2019 *2) Based on written approval of the National Bank, a licensed payment instrument issuer under full responsibility of and written outsourcing agreement with a regulated financial institution and pension funds, may be allowed to provide the following:* *a. micro-saving products;* *b. micro-credit products;* *c. micro-insurance products; or* *d. pension products."* - Section 6, Licensing and Authorization of Ethiopian Payment Instrument Issuers Directive No. ONPS/01/2020
Operational Restrictions	Electronic money is designated as a payment instrument	*"e-money payment instrument" means a payment instrument utilizing e-money as defined in this Regulation for the purposes of making retail transfers"* - Section 3, The Gambia's Regulation for the Provision of Mobile Money Services
	Electronic money is not a savings product	*"A licensee shall not...(c) offer deposit facility to customers on their electronic money accounts and (d) present or market electronic money as deposit"* - Part IV, Electronic Payment Services Regulations in Botswana 2019 *"The fact of the matter is that the taking of deposits from the general public by an unregistered person (non-bank) is a criminal offence in terms of the provisions of the Banks Act."* - Section 6.1, Position paper on Electronic Money 2009, National Payment System Department, South African Reserve Bank
	Electronic money accounts cannot earn interests	*"An issuer shall not...extend credit to the user, or pay interest or profits on the e-money balances, or anything else that would add to the monetary value of the e-money"* - Section 20, Guidelines for Retail Payment Systems and Instruments, Zimbabwe
	Mandatory customer identification	*"The E-money Institution shall comply with:* *(1) Know Your Customer (KYC) requirements;* *(2) other laws and regulations or guidelines as may be issued by relevant authorities."* - Part VI, National Payment Systems Directive on Electronic Money Issuance in Zambia, 2018

	Stringent initial minimum capital	*"A minimum paid-up capital of Ethiopian Birr 50,000,000 (fifty million birr) shall be contributed in cash and the amount shall be deposited in a blocked account with a bank in the name of the applicant payment instrument issuer"* - Section 4, Licensing and Authorization of Ethiopian Payment Instrument Issuers Directive No. ONPS/01/2020. *"An operator shall be required to have an initial minimum capital of one million (United States Dollars)"* - Section 6, Guidelines for Retail Payment Systems and Instruments, Zimbabwe
	Mandatory float account for non-banks	*"A licensed payment instrument issuer shall keep the total amount of electronic money float in the form of cash deposited in a bank and/or invest in any other safe Government security as prescribed by the National Bank.* *2) Upon the request and written approval of the National Bank, a licensed payment instrument issuer shall open an electronic money float cash deposit account with a bank."* - Section 10, Licensing and Authorization of Payment Instrument Issuers Directive No. ONPS/01/2020, Ethiopia *"Trust account means an escrow account relating to electronic value movements through deposits and withdrawals by merchants, agents, billers and other customers."* - Section 2, Guidelines for Retail Payment Systems and Instruments, Zimbabwe
	Transaction or Balance limit	*"The aggregate balance and transaction across electronic money accounts shall not exceed the limits stipulated for the account type."* - Section 28, Electronic Payment Services Regulations in Botswana 2019
Underlying Drivers	Customer protection stimulates a cautious approach	*"If the taking of deposits from the general public is a risky business for banks despite its regulation and ongoing supervision, it is even more risky when deposits are taken from the general public by unregulated and unsupervised persons and entities."* - Section 6.1, Position paper on Electronic Money 2009, National Payment System Department, South African Reserve Bank *"... emerging e-money products may require regulatory adjustment or intervention, which may arise from the need to:* *a) maintain the integrity, confidence and limit the risk in the NPS;* *b) assist other regulatory authorities in providing consumers with adequate protection from unfair practices, fraud and financial loss; and* *c) assist law enforcement agencies in the prevention of criminal activity."* - Section 4, Position paper on Electronic Money 2009, National Payment System Department, South African Reserve Bank
	Payment is a gateway to financial inclusion	*"Mandate dedicated bandwidth for data services to give priority to payments and other e-channels as a temporary measure to drive mobile payments"* - Section 7, Nigeria National Financial Inclusion Strategy (Revised) 2018 *"The introduction of mobile telephony in Nigeria, its rapid growth and adoption and the identification of person to person payments as a practical strategy for financial inclusion, has made it imperative to adopt*

		the mobile channel as a means of driving financial inclusion of the unbanked". - Regulatory Framework for Mobile Money Services in Nigeria *"In addition, mobile money has the potential to continue driving financial inclusion (as it has done since 2010)."* - Republic of Ghana, National Financial Inclusion and Development Strategy (NFIDS) 2018–2023
	Saving is a gateway to loans	*"Some FSPs have chosen to first offer their customers digital savings products, and then enable access to digital credit products. In this scenario, savings are a lever to activate the possibility of receiving credit. In some cases, a good savings history would qualify a customer for a higher loan amount"* - Digital Credit Regulation in Tanzania, Alliance for Financial Inclusion 2020

Table 3.2: Categories, Related Codes, and Sample Data

3.4 Findings and Discussions

According to our empirical evidence, digital savings are not prioritised in financial inclusion efforts in Africa. Our findings show that the policy for digital financial services in Africa is primarily focused on electronic money, and digital savings are only mentioned occasionally, if at all. Fourteen (14) countries[8] in Africa refer to two regional guidelines for their digital financial services policies, namely the *Economic and Monetary Community of Central Africa* (CEMAC) and the *West African Economic and Monetary Union* (WAEMU). However, there is no specific policy for digital savings in these two regional guidelines. This situation is also noticeable in the twenty-five countries with national DFS policies. Eight countries – *Algeria*, *Angola*, *Eritrea*, *Libya*, *Mauritania*, *Seychelles, Sudan,* and *Tunisia* do not have a digital financial services policy document, while the policy document for *Comoros* contains minimal information. These are summarised in Table 3.3 below.

[8] Eight countries in West African Economic and Monetary Union (WAEMU) and six in Economic and Monetary Community of Central Africa (CEMAC).

No Policy	Incomprehensive	Regional	National
Algeria	Comoros	Cameroon (CEMAC)	Botswana
Angola		Central African Republic (CEMAC)	Cabo Verde
Eritrea		Chad (CEMAC)	Democratic Republic of the Congo (DRC)
Libya		Equatorial Guinea (CEMAC)	Egypt
Mauritania		Gabon (CEMAC)	Eswatini
Seychelles		Republic of the Congo (CEMAC)	Ethiopia
Sudan		Benin (WAEMU)	The Gambia
Tunisia		Burkina Faso (WAEMU)	Ghana
		Côte d'Ivoire (WAEMU)	Guinea
		Guinea-Bissau (WAEMU)	Kenya
		Mali (WAEMU)	Lesotho
		Niger (WAEMU)	Liberia
		Senegal (WAEMU)	Malawi
		Togo (WAEMU)	Mauritius
			Namibia
			Nigeria
			Rwanda
			Sierra Leone
			Somalia
			South Africa
			South Sudan
			Tanzania
			Uganda
			Zambia
			Zimbabwe

Table 3.3: Digital Financial Services Policy Landscape

3.4.1 The Absence of Digital Savings Policies

The lack of policy tailored explicitly to digital savings shows the low level of attention and priority given to digital savings in financial inclusion efforts across Africa. We found

that this approach is common across the continent, where policy on digital savings is typically attached to or layered on the other components of digital financial services, primarily digital payments. This limitation, along with the stringent conditions on using electronic money as a savings tool, hinders the availability of pro-unbankable digital savings products and discourages the unbankable from adopting digital savings.

As summarised in Figure 3.2, one of the stringent conditions of electronic money policies is the absence of tiered know your customer (KYC) guidelines. Without a well-defined tiered KYC structure, there is no clear path for providers to conduct customer due diligence for low-value accounts and transactions. Given the low level of anti-money laundering (AML) related risks associated with the poor (HORUS Development Finance, 2011), implementing a tiered KYC system can reduce the onerous requirements that impede the digital savings account opening processes for the unbankable. As the unbankable typically save in small amounts, applying traditional KYC guidelines that are used for bank accounts may discourage them from adopting digital savings products.

Secondly, only a fifth of the countries with operational policies permit the payment of interest on customer account balances. Even when non-banks are permitted to offer digital savings, they are often prohibited from paying interest to their customers. This condition discourages the unbankable, as earning interest is a significant incentive for adopting digital savings (Lwanga Mayanja and Adong, 2016).

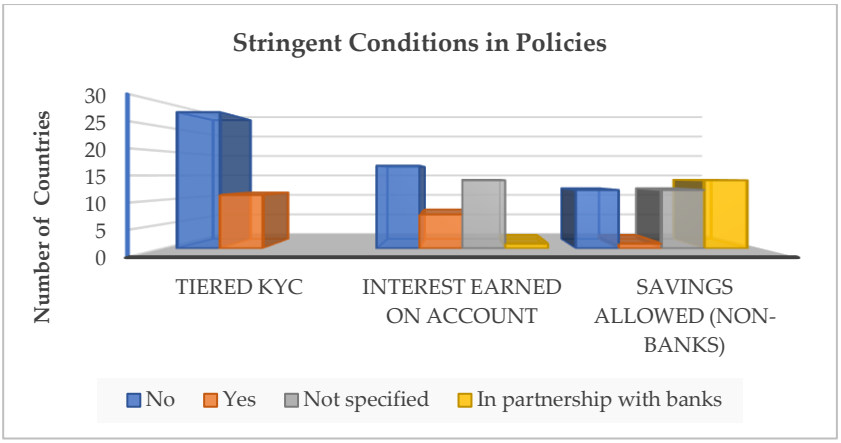


Figure 3.2: Stringent Conditions in Policies Impeding the Uptake of Digital Savings

Furthermore, non-banks are required to open and manage an "*escrow*" account with licensed financial institutions where customer funds should be domiciled. This provision limits the control of non-banks over customer funds and prevents them from generating additional revenue from these funds. Additionally, the high paid-up capital requirements for non-banks in several countries, such as *2.5 million USD in* the Democratic Republic of Congo, *2 million USD* in Somalia, *1.6 million* USD in Ethiopia, and *1 million USD* in Zimbabwe, can be a significant hindrance for potential providers looking to enter the digital savings market. These figures raise the entry barrier for such providers, stonewalling the maturation of financial inclusion in general, and digital savings in particular. A detailed list of stipulated conditions by country is presented in Appendix B.

3.4.2 Policy structure across African regions

Similarities can be observed within and disparities across the geographic regions in Africa – the North, South, Central, East, and West. In North Africa, there is generally a low level of involvement from regulators. None of the countries in the region, with the

exception of Egypt which follows a bank-led policy, have a digital financial services policy. This regional position corroborates Pearce (2011), who found that North Africa is among the least involved regions in promoting financial inclusion. The evidence of inflexibility and lack of commitment towards elements of financial inclusion such as digital savings shows the limited focus on serving the unbankable population and has resulted in high levels of financial exclusion in the region (Lyons and Kass-Hanna, 2021).

The Southern African region exhibits a spectrum of policy arrangements that vary in their level of restrictiveness, from the most to least restrictive. The most restrictive policy type is the bank-led South African policy. This outcome is unsurprising as South Africa has more developed financial institutions and an extremely high financial inclusion index compared to other African countries (Demirgüç-Kunt et al., 2017). This suggests that financial exclusion is not a widespread issue in South Africa, thus a restrictive approach to digital financial services policy may be appropriate in this context. Besides, South Africa is the only African representation in the G20, an international platform that brings together finance ministers and central bank governors of the world's largest economies. This serves as a testament to South Africa's economic strength and prominent position among African nations. Despite high levels of financial inclusion, there may not be an appreciable digital savings uptake. To address this discrepancy, a more flexible approach can be implemented to facilitate the transition of unbankable individuals into formal finance through digital savings. At the opposite end of the spectrum, Eswatini has the least restrictive policy approach

towards digital savings, allowing both banks and non-banks to this service. Angola is an exception as it lacks a digital financial service policy. On the other hand, the rest of the region permits non-banks to become electronic money issuers but prohibits them from providing digital savings.

In Central Africa, most countries follow a regional policy arrangement supervised by the Economic and Monetary Community of Central Africa (CEMAC). Hence, they adopt a similar policy that allows non-banks to participate in electronic money services but prohibits them from digital savings without partnerships with banks. East African countries, known for the widespread use of M-Pesa and other electronic money services, are the largest adopters of electronic money in Africa (GSMA, 2019). The policies of most countries in this region allow non-bank entities to offer digital savings in partnership with banks. However, countries such as Sudan and Eritrea have not developed financial inclusion policies as seen in other member states. One possible reason for this lag is the influence of neighbouring North African countries which also have limited policies in this area. As the poster child for electronic money, Kenya is the early adopter of digital financial services in Africa. Even though Kenya's policies technically permit non-banks to lead electronic money arrangements but not digital savings offerings, in reality, both Kenya and its neighbour Tanzania have adopted a more relaxed approach. As a result, it has contributed to the success of multiple digital savings products, which will be further explored in the following section.

In recent years, West Africa has been characterised by a sporadic rise in electronic money adoption (GSMA, 2019). However, the majority of countries only permit non-banks to provide digital savings in partnership with banks. While this transition from a bank-centric approach to a more permissible system results in an improvement in financial inclusion indices, the focus on digital savings is still evolving. Interestingly, the policy approaches towards digital savings vary between anglophone and francophone countries. Specifically, the eight francophone countries enforce the regional guidelines set by the Central Bank of West African States (BCEAO), which permit partnerships between banks and non-bank entities for digital savings offerings. In contrast, anglophone countries such as Ghana, which are not part of BCEAO, have also recently witnessed significant improvements in financial inclusion through national policies that allow for non-bank involvement in digital savings. This convergence in approach across West Africa can be attributed to the close relationships among the member states of the Economic Community of West African States (ECOWAS), the regional political and economic union governing the area.

3.4.3 Typology of Digital Savings from Policies in Africa

Drawing on the analysis of the data collected, we identified three predominant variants of digital savings offered through digital financial services policies in Africa: (1) *Traditional finance-centric,* (2) *Electronic money-centric,* and (3) *Electronic money with digital savings features*. Table 3.4 illustrates the distinctions among the three variants of digital savings, which are further examined in the subsequent sub-sections.

	Traditional finance-centric	Electronic money-centric	Electronic money with digital savings features
Approach	Follows the traditional finance approach where banks are the sole providers of digital savings	Leverages on electronic money, which is a payment instrument	Leverages on electronic money but with a digital savings component
Partnership	Banks can decide to partner with non-banks	Non-banks can only offer digital savings in partnership with banks	Both banks and non-banks can offer digital savings with or without partnerships (partnership structure depends on individual country-level approach)
Operational Restrictions	A cautious approach to digital savings. The most restrictive.	A less restrictive approach to digital savings	The least restrictive approach to digital savings
Underlying Drivers	Customer protection is of the utmost importance	Payment is a gateway to financial inclusion	Saving is a gateway to loans
Implication for the Unbankable	Excludes the unbankable from digital financial services, including digital savings	Excludes the unbankable from digital financial services other than digital payments. The unbankable can spend money easier but are unable to save	Includes the unbankable in the full array of digital financial services, which include digital savings
Countries	Egypt and South Africa	CEMAC countries, West African countries, Botswana, DR Congo, Ethiopia, Lesotho, Malawi, Mauritius, Namibia, Rwanda, Somalia, South Sudan, Uganda, Zambia, and Zimbabwe	Eswatini, Kenya, and Tanzania

Table 3.4: Typology of Digital Savings in Africa

Type 1: Traditional Finance-centric Approach

The most restrictive type of digital savings sanctioned by policy adheres to a traditional finance approach where a licensed financial institution such as a bank or microfinance institution, provides savings-inclusive digital financial services or plays a leading role in a digital financial services arrangement with non-bank entities. An illustration of this

is Section 7 of the Position Paper on Electronic Money by the National Payment System Department of the South African Reserve Bank, which states:

"Due to the nature of e-money, as described in this Position Paper, only South African registered banks may issue e-money… Section 52 of the Banks Act allows for non-banks to enter into arrangements with banks that may allow them to offer payment-related services in conjunction with the bank."

The *traditionalist* policy driving this variant takes a conservative approach to digital savings by developing policies that place consumer protection as the primary concern. The Position Paper on Electronic Money by the National Payment System Department of the South African Reserve Bank further explains this:

"The Bank has always taken a direct interest in the developments and the likely implications of electronic payments, but realizes that emerging e-money products may require regulatory adjustment or intervention, which may arise from the need to: a) maintain the integrity, confidence and limit the risk in the NPS; b) assist other regulatory authorities in providing consumers with adequate protection from unfair practices, fraud and financial loss; and c) assist law enforcement agencies in the prevention of criminal activity."

Under this arrangement, non-bank providers do not hold an operating licence; it is owned by banks that dictate the partnership structure. With the bank as the lead, the account holders have access to a comprehensive range of financial services, including digital savings, and can link their existing bank accounts to their e-wallets.

This approach is underpinned by customer protection, which helps to build trust and confidence in the financial system. However, it comes with significant drawbacks as it is relatively inflexible and less likely to accelerate the take-up of digital savings. Firstly,

digital savings are offered by the same risk-averse traditional financial institutions that have been ineffective in closing the financial inclusion gaps, as they have traditionally shown less interest in serving the low-income population (Suárez, 2016). Secondly, due to regulatory restrictions, banks impose onerous account opening requirements that are challenging for the unbankable to meet, thereby resulting in their exclusion by default. As a result, the digital savings offerings under this traditional finance-centric arrangement are akin to existing digital banking services which cater primarily to banked or high-income individuals but largely overlook the unbankable. Therefore, this approach falls short of delivering inclusive finance to the unbankable, which could lead to further exclusion.

Type 2: Electronic Money-centric Approach

An electronic money-centric approach to digital savings is a digital payment-focused arrangement that enables non-bank entities to offer electronic money through e-wallets but are mandated to partner with banks in order to provide services higher in the digital financial services value chain, such as digital savings. However, this emphasis on digital payments presents several challenges to the development of digital savings. For example, under this arrangement, non-bank electronic money issuers (NBEIs) are not permitted to pay interest on customer balances and are prohibited from holding customer deposits. Instead, they must keep funds in an escrow account with a licensed financial institution. Research reports that 86% of the jurisdictions studied mandate NBEIs to warehouse their customers' funds with a prudentially regulated financial institution (World Bank Group, 2017). Our evidence suggests that this is the

predominant form of digital savings on the continent, as many countries take a conservative approach to financial innovation, applying restraints and limitations on it. To illustrate this further, the Bank of Uganda Mobile Money Guidelines 2013 stipulate that:

"The agreement between the licensed institution and the mobile money service provider on matters governing the provision of mobile money services. The agreement shall provide for the establishment of an escrow account in the licensed institution referred to in 6 (a) (ii) above subject to the conditions set out below. The funds in this account do not belong to the mobile money service provider, but the holders of the e-money in the mobile money platform."

While this model appears less restrictive and allows for a greater level of participation by the NBEIs, certain provisions are detrimental to fostering digital savings. The approach is heavily focused on digital payments (*payment-centric)*, making them readily accessible to the unbankable. However, this makes it easier for the unbankable to spend money but harder to save using the electronic money instrument. The lack of equal access to digital savings alongside digital payments can leave the unbankable financially worse off, as electronic money is believed to encourage spending among its users (Cobla and Osei-Assibey, 2018).

Type 3: Electronic Money-centric with Digital Savings Feature

The most adaptable variant utilises the electronic money system architecture to deliver digital savings services to the unbankable. This permissive policy, which prioritises digital savings, enables providers to offer fewer more diverse savings products, pay

interest on customer balances, and implement a user-friendly identification system that is inclusive of the unbankable.

Currently, Eswatini is the only country with a policy framework that permits this type of digital savings. The Minimum Standards for Electronic Payment Scheme 2010 in Eswatini allows non-bank entities to offer digital savings, but they must apply through a financial institution that acts as an agent or partner. In reality, aside from Eswatini, type 3 digital savings are also evident in Kenya and Tanzania, where digital savings offerings are specifically tailored to the needs of the unbankable. In Kenya, the Electronic Money Regulation of 2013 prohibits non-banks from offering digital savings using their electronic money licence. However, in practice, MNO-led products such as M-Shwari (see Figure 3.3 and Figure 3.4) and M-Kesho represent savings-centric offerings specifically designed to cater to the unbankable. Such offerings require, at the minimum, a basic phone to open an account or conduct transactions via SMS or USSD active codes. Besides, no account opening documentation or minimum balance is required, and the account holders receive interest on their account balances.

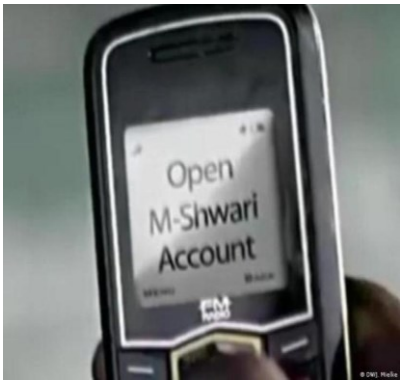


Figure 3.3: M-Shwari Platform (Source: www.dw.com)

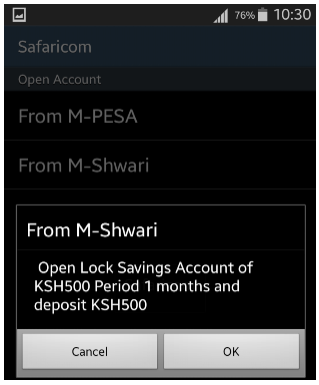


Figure 3.4: M-Shwari Platform (Source: www. techstartups101.com)

Similarly, in Tanzania, the Electronic Money Regulation of 2015 mandates non-banks to only offer digital savings in partnership with banks. In practice, however, digital savings products such as M-Pawa (similar to Kenyan offerings) match the type 3 variant that favours the unbankable. This position is fully influenced by the government's approach to driving digital savings, as evidenced in Tanzania's 2020 Digital Credit Regulation documented by the Alliance for Financial Inclusion (2020):

"Tanzania has experienced significant growth in the use of e-money over the last decade…Digital technologies play an important role in the country's second Five Year Development Plan (FYDP II)…Furthermore, Tanzanians were offered digital savings accounts, which have expanded their options for managing and storing funds."

This permissive approach towards non-banks enables the unbankable to have access to a comprehensive range of digital financial services, including digital savings. In addition, non-bank providers can offer digital savings in parallel with traditional financial institutions, thereby expanding the financial services available to the unbankable (see Figure 3.5). Nevertheless, it is observed that the driver for such a less

restrictive approach is to use digital savings as a precursor to providing loans to the unbankable, as evidenced in Tanzania's 2020 Digital Credit Regulation:

"Some FSPs have chosen to first offer their customers digital savings products, and then enable access to digital credit products. In this scenario, savings are a lever to activate the possibility of receiving credit. In some cases, a good savings history would qualify a customer for a higher loan amount."

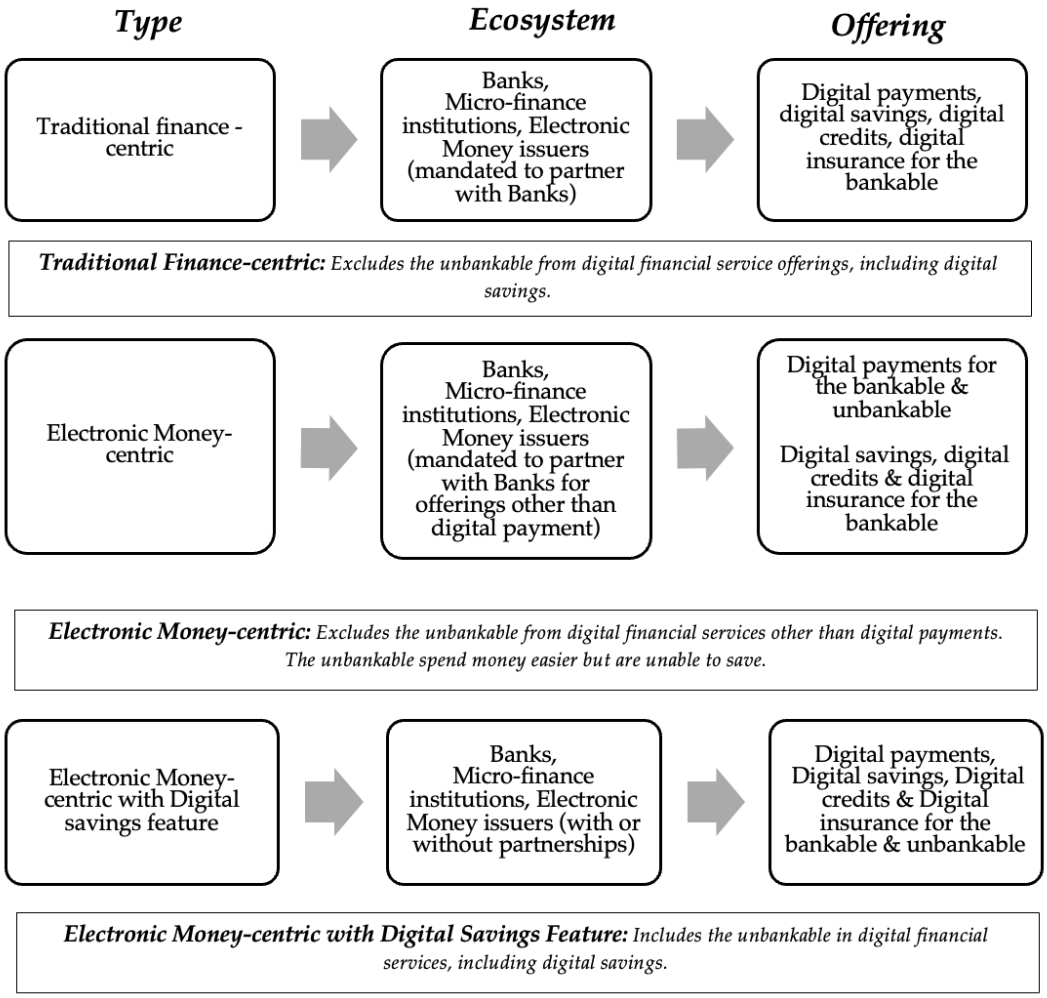


Figure 3.5: Digital Savings Typology from Africa

3.5 Contributions to Research and Implications to Policy

This study sheds light on the systemic issues overlooked in previous research on financial inclusion in Africa. It exposes a policy bias towards digital payments, which

unintentionally discourages the development of digital savings. The absence of digital savings policies implies that digital savings are not accorded enough priority in financial inclusion efforts, being viewed as supplementary services rather than a fundamental need. As a result, this lack of an enabling regulatory framework hinders both the ability of providers to develop robust financial products (*supply*) and customer adoption and usage (*demand*) (GSMA, 2015).

From the most to the least restrictive policy variants, we find evidence that only three countries are actively and intentionally focused on bringing electronic money with digital savings features to the unbankable, with many countries placing restrictions that may discourage digital savings uptake. For example, the traditional finance-centric approach may be suitable for a highly financially inclusive economy, allowing the applicable countries to consolidate their financial systems without upsetting what already works. However, for economies with high levels of financial exclusion, such as many African countries, this approach results in the unintentional exclusion of the unbankable by default.

Despite the more permissive electronic money variant adopted by many African countries, it still excludes the unbankable from accessing digital savings and has failed to significantly increase savings rates on the continent. Allowing these vulnerable groups access to payments without access to savings may push them further into debt. In keeping with the promise of financial inclusion, policies and directions specially designed for digital savings are necessary. This is embodied by the electronic money-

centric with digital savings feature approach that offers unbankable access to a full suite of digital financial services, including digital savings.

Historically, digital financial services in Africa evolved from a traditional finance-centric approach. This is evident in the bank-led models that pioneered mobile money in several African countries, such as Ghana and Nigeria, before transitioning to the less restrictive models. Currently, policymakers are faced with the challenge of finding a balance between customer protection and promoting innovation towards financial inclusion. This has led to a reluctance to fully embrace the most flexible approach. According to Muthiora (2015), regulatory decisions are often influenced by the need to protect customers from market fragilities such as fraud and cyber-attacks. Policymakers, as *gatekeepers* of the financial industry and the most potent *market actors* (Mishra et al., 2022), impose strict guidelines in electronic money policies that inadvertently restrict non-bank entities from providing digital savings. This is done to protect the unbankable, who are particularly vulnerable to these risks. While these protective measures are considered necessary to protect the unbankable from *financial predators*, they also greatly limit the availability of suitable products for the unbankable.

The most flexible policy approach can be instrumental in advancing digital savings for the unbankable, particularly in remote areas. One way to achieve this is by adopting a model that optimises the use of electronic money for digital savings. This can be done by allowing providers to earn interest on their escrow accounts and by encouraging

interest to be paid on customers' account balances. We argue that promoting savings, rather than just payments, should be the primary focus in helping the unbankable achieve their financial goals. For individuals to truly escape poverty and generate financial health, efforts must be made to explicitly promote savings within the broader financial inclusion programs by governments, policymakers, and development agencies such as the World Bank.

Irrespective of the policy approach, this paper recognises the centrality of mobile network operators (MNOs) in advancing financial inclusion to the unbankable. We observe that many jurisdictions overlook the potential of MNOs in the digital savings space, and do not include them in their policies. One possible reason for this is that MNOs are perceived as significant threats to traditional banks and a *headache* to the regulators, due to their ability to scale quickly and potentially become a dominant force in the financial sector. However, MNOs can leverage their existing infrastructure, vast agent network, customer reach, and technological capabilities to drive down transaction and operational costs, expand access to remote locations, and increase customer convenience (di Castri, 2013; GSMA, 2013), making them valuable partners in promoting financial inclusion and expanding digital savings services to the unbankable. Besides, MNOs have a massive base of unbankable customers and can reach this underserved population more effectively than other providers. They possess more expertise than banks in establishing and managing extensive distribution networks; the largest MNO in a country has 100-500 times more airtime reseller outlets than bank branches (Alexandre et al., 2011). With an inclusive policy that recognises

the potential of MNOs, they can partner with or lead digital savings initiatives, making USSD channels and other digital gateways accessible and affordable to the unbankable.

Our research on digital savings policies in Africa has identified a regional pattern and typology of digital savings. The findings of this study serve as a template for future research and a foundation for understanding the uptake and usage of digital savings among the unbankable population in Africa. Future research could build on this study by conducting country-level analyses, examining the impact of additional factors (such as culture) on digital savings policy decisions, and investigating why the policies of certain countries such as Kenya differ from their implementation in practice. This research aims to foster further discussions within the financial inclusion community given the new insights on digital savings in Africa. As the literature on this topic is limited, this study represents a pioneering effort in identifying and analysing the policies for digital savings on the continent.

3.6 Conclusion

This research provides insights into gaps in digital savings policies in Africa, highlighting significant dissonance between the promise of financial inclusion and the reality on the ground. The lack of dedicated policies that prioritise and specifically cater to digital savings has impeded its potential to promote financial inclusion. Policymakers have a crucial role to play in addressing this issue by balancing the need for customer protection with the need for innovation. A collaborative approach

involving regulators, industry players, and other stakeholders is essential to foster innovation while protecting customers. A shift in mindset towards recognising digital savings as a necessity, rather than an optional instrument, will be key in advancing the ecosystem and promoting financial inclusion for all.

3.7 References

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Appendix A – Empirical Studies on Financial Inclusion in Africa

S/N	Author(s) (year)	Research Scope					Research Focus			Research Location	Stakeholder focus
		Financial Inclusion	Mobile Money	Payments	Micro-credit	Digital savings	Demand	Supply	Policy		
1	Abor et al. (2018)	√					√			Ghana	Households
2	Abiona & Koppensteiner (2018)	√	√				√			Tanzania	Rural & urban households
3	Adam & Walker (2016)		√						√	East African countries	Rural & urban households
4	Afawubo et al. (2020)		√				√			Togo	Households
5	Aggarwal et al. (2020)		√				√			Malawi	Urban microentrepreneurs
6	Aggarwal et al. (2020)		√			√	√			Malawi	Urban microentrepreneurs
7	Aker & Wilson (2013)		√			√	√	√		Ghana	Underbanked rural communities
8	Aker et al. (2011)		√	√			√	√		Niger	Rural households
9	Aker et al. (2016)		√	√			√			Niger	Unbankable
10	Akinyemi & Mushunje (2020)		√				√			Ghana, Kenya, Lesotho, Mozambique, Nigeria, Rwanda, Senegal, South Africa, Tanzania, and Uganda	Rural Dwellers
11	Anarfo et al. (2020)	√					√	√	√	Sub-Saharan Africa	Banks
12	Aslan et al. (2017)	√					√			140 countries	Unbankable
13	Asongu et al. (2020)		√				√	√	√	African countries	Adults
14	Asuming et al. (2019)	√	√				√	√		31 Sub-Saharan African countries	Adults
15	Banerjee et al. (2015)				√		√			Bosnia and Herzegovina, Ethiopia, India, Mexico, Mongolia, and Morocco	Adult and microentrepreneurs (rural and urban)
16	Bara (2013)	√	√					√	√	Zimbabwe	Providers
17	Bastian et al. (2018)					√	√			Tanzania	Female microentrepreneurs
18	Batista & Vicente (2013)		√				√			Mozambique	Rural dwellers
19	Batista & Vicente (2020a)		√			√	√			Mozambique	Smallholder farmers
20	Batista & Vicente (2020b)		√				√			Mozambique	Rural households
21	Beck et al. (2015)		√				√			Kenya	SMEs
22	Bharadwaj & Suri (2020)				√	√	√			Kenya	Adults
23	Bharadwaj et al. (2019)				√		√			Kenya	Unbankable
24	Bongomin & Ntayi (2020)	√	√				√	√		Uganda	MSMEs

25	Bongomin et al. (2018)	√	√				√			Uganda	Poor households
26	Bongomin et al. (2018)	√					√		√	Uganda	Unbankable
27	Bongomin et al. (2019)		√				√			Uganda	MSMEs
28	Burns (2018)		√					√	√	Sub-Saharan Africa	-
29	Carlson (2017)				√			√		Africa	Borrowers
30	Cobla & Osei-Assibey (2018)		√				√			Ghana	Students
31	Comninos et al. (2009)			√			√	√		17 sub-Saharan countries	Households/Unbankable
32	Coulibaly (2020)		√				√			9 countries in the West African Monetary Union	Individuals
33	David-West et al. (2019)		√					√		Nigeria	Mobile Money Providers
34	Demir et al. (2020)	√					√			140 countries	Poor households
35	Demombynes & Thegeya (2012)		√			√	√			Kenya	Adults
36	Economides & Jeziorski (2015)		√				√			Tanzania	User transactional data
37	Eijkman et al. (2010)		√				√	√		Kenya	M-PESA agents
38	Evans & Pirchio (2015)		√					√	√	22 developing countries	Providers
39	Evans (2016)	√					√		√	15 African countries	Banked adults
40	Ezeh & Nwankwo (2018)		√				√			Southeast, Nigeria	Bank customers
41	Ghosh (2016)	√						√		12 MENA countries	-
42	Gichuki & Mulu-Mutuku (2018)		√				√			Kenya	Women Micro-entrepreneurs
43	Gosavi (2015)		√				√			Kenya, Tanzania, Uganda, and Zambia	Firms
44	Gosavi (2018)		√				√			Kenya, Tanzania, Uganda, and Zambia	Firms
45	Greenacre et al. (2014)		√					√	√	Malawi	Regulators/Providers
46	Gurbuz (2017)		√			√	√			Kenya	Rural households
47	Gutierrez & Singh (2013)	√					√		√	35 countries	Individuals (unbankable)
48	Jack & Suri (2011)		√				√			Kenya	Households: Banked and unbankable
49	Jack & Suri (2014)		√				√			Kenya	Unbankable
50	Jack & Suri (2016)		√				√			Kenya	Unbankable
51	Jack et al. (2013)		√				√			Kenya	Households
52	Johnson & Krijtenburg (2018)		√	√			√			Kenya	Households
53	Johnson & Nino-Zarazua (2011)	√					√	√	√	Kenya & Uganda	Individuals (Rural & urban)
54	Kanobe et al. (2017)		√					√	√	Uganda	Provider
55	Kiconco et al. (2019)		√				√			Central Uganda	Urban dwellers
56	Kiiti & Hennink (2016)					√	√			Kenya	Sem-rural and semi-urban areas

57	Kikulwe et al. (2014)		√				√			Kenya	Smallholder Farmers
58	Kirui et al. (2013)			√			√			Kenya	Rural households
59	Kodongo (2018)	√					√	√	√	Kenya	Households/Banks
60	Ky et al. (2017)		√				√			Burkina Faso	Individuals (Rural & urban)
61	Ky et al. (2020)	√	√				√			Burkina Faso	Unbankable
62	Lashitew et al. (2019)		√					√	√	Kenya	Provider
63	Lepoutre & Oguntoye (2017)		√					√	√	Kenya & Nigeria	Mobile Money Providers
64	Lwanga & Adong (2016)		√			√	√			Uganda	Adults/Households
65	Macmillan et al. (2016)		√					√	√	Uganda	Providers
66	Magongo (2019)	√	√				√			Eswatini	Rural & urban households
67	Mavodza (2019)		√				√			South Africa	Zimbabwean Migrants
68	Mbiti & Weil (2011)		√				√			Kenya	Individuals (Rural & urban)
69	Mbiti & Weil (2013)		√				√			Kenya	M-PESA users
70	Mora & Prior (2018)				√		√			Tunisia	Unbankable
71	Morawczynski (2009)		√				√			Kenya	Rural farmers
72	Mothobi & Grzybowski (2017)		√				√			11 African countries	Individuals (Rural & urban)
73	Munyegera & Matsumoto (2016)		√				√			Uganda	Rural households
74	Munyegera & Matsumoto (2017)		√				√	√		Uganda	Rural households
75	Murendo et al. (2018)		√				√			Uganda	Rural households
76	Myeni et al. (2019)	√	√				√			Eswatini	Adults
77	Nan (2018)					√		√		Kenya	Financially excluded
78	Nan & Markus (2019)		√			√				Kenya	Financially excluded
79	N'dri & Kakinaka (2020)	√	√				√	√		Burkina Faso	Financially included/excluded
80	Ntayi & Bongomin (2019)		√				√		√	Northern Uganda	MSMEs
81	Ondiege (2015)	√	√					√	√	Kenya, Nigeria, Tanzania, and Uganda	MNOs
82	Osei-Assibey (2014)		√			√	√			Ghana	Unbankable
83	Ouma et al. (2017)					√	√			Kenya, Uganda, Malawi, and Zambia.	Households
84	Plyler et al. (2010)		√				√			Kenya	Rural communities
85	Porteous (2009)		√					√	√	Kenya, South Africa, India & Philippines	Regulators
86	Raphael (2016)		√				√			Tanzania	Individuals
87	Riley (2018)		√				√			Tanzania	Rural households
88	Robb and Vilakazi (2015)		√	√				√		Kenya, Tanzania, and Zimbabwe	-

89	Sahay et al. (2020)	√		√	√		√	√	√	52 developing countries	Users/Providers/Regulatory bodies
90	Sekabira & Qaim (2017)		√				√			Uganda	Coffee farmers
91	Sousa (2015)	√					√	√	√	90 developing & emerging countries	Adults
92	Suárez (2016)		√				√	√	√	Kenya & Mexico	-
93	Suri & Jack (2016)		√				√	√		Kenya	Households
94	Tiwari et al. (2019)	√	√				√	√		Northern Kenya	Poor women
95	Tobbin (2010)		√	√			√			Ghana	Adults
96	Uduji & Okolo-Obasi (2018)			√			√			Nigeria	Young rural women
97	Van Hove & Dubus (2019)	√	√			√	√			Kenya	Adults
98	Wieser et al. (2019)		√				√			Northern Uganda	Rural Dwellers
99	Zins & Weill (2016)	√	√				√			37 African countries	Adults

Appendix B – Digital Savings in Electronic Money Policies

Country	Regulator	Year updated	Who can lead?	Typology	Payment instrument	Savings allowed?		Interests earned on balance?	Tiered KYC
						Banks	Non-banks		
Economic and Monetary Community of Central Africa (CEMAC), comprising Cameroon, Central African Republic, Chad, Equatorial Guinea, Gabon, Republic of the Congo	Bank of Central African States (BEAC)	2018	Both banks & non-banks	Type 2	√	√	Not specified	Not specified	×
West African Economic and Monetary Union (WAEMU) comprising Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, and Togo	Central Bank of West African States (BCEAO)	2015	Both banks & non-banks	Type 2	√	√	In partnership with banks	×	×
Botswana	Bank of Botswana	2019	Both banks & non-banks	Type 2	√	√	×	×	√
Cabo Verde	Banco de Cabo Verde	2019	Both banks & non-banks	Type 2	√	√	×	×	×
Democratic Republic of the Congo (DRC)	Banque Centrale du Congo (BCC	2018	Both banks & non-banks	Type 2	√	√	×	×	√
Egypt	Central Bank of Egypt	2010	Banks	Type 1	√	√	×	×	No, ID required
Eswatini	Central Bank of Eswatini (CBE)	2019	Both banks & non-banks	Type 3	√	√	√	Not specified	×
Ethiopia	National bank of Ethiopia	2020	Both banks & non-banks	Type 2	√	√	In partnership with banks	√	√
The Gambia	Central Bank of The Gambia	2011	Both banks & non-banks	Type 2	√	√	Not specified	Not specified	×
Ghana	Bank of Ghana	2019	Both banks & non-banks	Type 2	√	√	In partnership with banks	√	√
Guinea	La Banque Centrale de la République de Guinée (BCRG	2017	Both banks & non-banks	Type 2	√	√	×	×	×

Kenya	Central Bank of Kenya	2013	Both banks & non-banks	Type 3	√	√	×	×	×
Lesotho	Central Bank of Lesotho	2017	Both banks & non-banks	Type 2	√	√	×	Not specified	√
Liberia	Central Bank of Liberia	2014	Both banks & non-banks	Type 2	√	√	Not specified	Not specified	√
Malawi	Reserve Bank of Malawi	2019	Both banks & non-banks	Type 2	√	√	×	√	×
Mauritius	Bank of Mauritius	2015	Both banks & non-banks	Type 2	√	√	×	√	×
Namibia	Bank of Namibia	2019	Both banks & non-banks	Type 2	√	√	×	×	×
Nigeria	Central Bank of Nigeria (CBN)	2018	Both banks & non-banks	Type 2	√	√	Not specified (Payment Service Banks can offer savings)	×	√
Rwanda	National Bank of Rwanda (BNR)	2016	Both banks & non-banks	Type 2	√	√	In partnership with banks	√	√
Sierra Leone	Bank of Sierra Leone	2015	Both banks & non-banks	Type 2	√	√	×	×	×
Somalia	Central Bank of Somalia	2019	Both banks & non-banks	Type 2	√	√	In partnership with banks	Not specified	×
South Africa	South African Reserve Bank	2009	Banks	Type 1	√	√	×	Not specified	×
South Sudan	Bank of South Sudan	2017	Both banks & non-banks	Type 2	√	√	Not specified		√
Tanzania	Bank of Tanzania (BOT)	2015	Both banks & non-banks	Type 3	√	√	In partnership with banks	√	√
Uganda	Bank of Uganda (BOU)	2013	Both banks & non-banks	Type 2	√	√	Not specified		×
Zambia	Bank of Zambia	2018	Both banks & non-banks	Type 2	√	√	Not specified	√	√
Zimbabwe	Reserve Bank of Zimbabwe	2017	Both banks & non-banks	Type 2	√	√	In partnership with banks		×

4. Article III: Exploring the Affordances of Digital Savings among the Unbankable in Sub-Saharan Africa

4.1 Introduction

Access to financial services provides an opportunity to save in formal financial institutions and expand their economic opportunities (Ashraf et al., 2010; Lee et al., 2017; Johnson et al., 2018). In contrast, a lack of access to financial services limits an individual's ability to maintain savings (Naito et al., 2021), access credit (Medhi et al., 2009), and build resilience in the face of financial shocks (Iheanachor et al., 2021; Koomson et al., 2021). In developing nations, where access to formal finance is limited, many individuals resort to informal methods such as keeping money at home, burying cash, participating in tontines or thrift collections, and making risky investments in cattle or jewellery (Nandhi, 2012; Loaba, 2021). However, these methods are often unreliable and expose individuals to risks such as loss through the decay of cash, theft, depreciation, or change of currency.

Regardless of the progress in financial inclusion, barriers to saving still exist worldwide (Karlan et al., 2014). While the positive effects of savings on economic well-being have been well-documented in the literature, formal savings rates remain low in developing countries (Spantig, 2021). Mounting evidence suggests regulatory constraints, distance, transaction costs, and lack of trust are major barriers to the availability of savings products, while financial literacy gaps, poverty, and other demand-side

conditions also contribute to low savings rates, even among those who have bank accounts (Karlan et al., 2014).

Despite these barriers, there is evidence to suggest that there is latent demand for savings. The advent of disruptive technologies in finance through FinTechs, particularly digital savings, has provided a pathway for transforming financial access for non-bank users (Naito et al., 2021) and making essential, affordable, and convenient financial services, such as savings, more widely available (Lwanga Mayanja and Adong, 2016; Ozili, 2018). However, saving rates remain low in sub-Saharan Africa, and the reasons for this trend have not been fully explored in the literature (Spantig, 2021). According to reports, only *15%* of adults reportedly save in a financial institution, a figure lower than the global average of *27%* (excluding high-income countries) (Demirgüç-Kunt et al., 2017; World Bank, 2019). This under-saving raises questions about whether the problem is more widespread and complex than initially perceived.

In the literature, the adoption of financial services and the impacts of financial inclusion have been decently discussed. Despite the acknowledged untapped demand for savings (Brune et al., 2011) and its recognition as a key vector for driving financial inclusiveness, digital savings remains an under-researched area in the field of digital financial inclusion (World Bank, 2019). The low uptake and usage of digital savings among the unbankable[9] in developing economies, such as sub-Saharan Africa, is particularly understudied (Demirgüç-Kunt et al., 2017). While previous research has

[9] The *unbankable are* people who do not have formal bank accounts and are deemed unprofitable to serve by the traditional banks.

focused primarily on mobile money and similar services, savings have been shown to have a more pronounced resilience effect than mobile money (Sakyi-Nyarko et al., 2022).

Despite the recognition of the importance of savings for financial inclusion, there is a lack of understanding about how digital savings afford financial inclusion, its impact on the unbankable, or how they interact with such financial services (Dupas and Robinson, 2013a). Previous studies on savings have mainly considered traditional saving methods such as lockboxes (Aggarwal et al., 2020b; Steinert et al., 2022), microfinance institutions (Kast and Pomeranz, 2014), formal bank accounts (Dupas and Robinson, 2013a; Prina, 2015; Dupas et al., 2018), and commitment savings accounts (Ashraf et al., 2006; Brune et al., 2011; Dupas and Robinson, 2013b). Recently, mobile money has emerged in savings discussions (Aggarwal et al., 2020a), in addition to testing for the efficacy of reminders (Karlan et al., 2016) and savings groups (Kast et al., 2012; 2018). While some scholars have identified specific factors that influence savings behaviour (Schaner, 2018), only a few have examined the uncharted territory of digital savings. As a result, there is limited evidence on what drives digital savings behaviour among the unbankable, a gap this paper aims to address.

Our study aims to address the research gap in understanding the behaviour of the unbankable population towards digital savings and its potential for financial inclusion. This study also responds to calls for affordances to be considered in the financial inclusion discourse (Muralidhar et al., 2019). We examine the influence of digital

savings on the day-to-day goals of the unbankable through the following research question: *How do the unbankable in developing countries utilise and perceive digital savings as an opportunity for financial inclusion?*

We approach this research problem through the lens of the affordance theory, which examines user behaviour towards a technology artefact. By understanding how digital savings are perceived and utilised by the unbankable, we aim to reveal its potential to drive financial inclusion. Adoption and diffusion of new products or innovations are determined by user behaviour, and therefore understanding this behaviour is key in identifying opportunities for financial inclusion.

Previous financial inclusion studies have primarily relied on quantitative methods that often overlook important contextual factors or qualitative techniques that only briefly mention these factors without further exploration (Mishra et al., 2022). These efforts fail to provide a comprehensive understanding of the issue and are often insufficient for theory building. To address these limitations, we employ some elements of grounded theory in our analysis that relates digital savings usage to the affordance theory, allowing us to develop a deeper understanding of digital savings behaviour among the unbankable, and making two propositions for theory extension.

The empirical context of our study is Nigeria, a country in sub-Saharan Africa known for being one of the major FinTech hubs in the region (EY, 2019). Nigeria shares similar economic, cultural, and political characteristics with many developing countries (Waweru, 2014) and has a large population of over 211 million people (United Nations,

2021), with a significant proportion (51.7%) of them being unbanked or financially excluded (EFInA, 2018). This has led to a poor savings culture and low financial inclusion statistics compared to other African countries (David-West et al., 2021). While efforts have been rife towards a fully financially inclusive society where individuals have access to various savings tools alongside other financial instruments such as payments (Central Bank of Nigeria, 2019), progress has been limited. Additionally, cash remains the primary medium of financial transactions in Nigeria despite the high teledensity (David-West et al., 2021), highlighting the persistence of barriers to financial services. Taking these into account, this study examines Nigeria as a suitable empirical context to understand how digital savings can drive financial inclusion.

The significance of this study is beyond suggestive. First, it is a pioneering effort in research on digital savings usage among the unbankable, identifying the socio-technical affordances associated with these savings tools. It further extends the affordance theory that predicates saving decisions in the face of technologies shaping user preferences. Second, it establishes a fundamental shift from traditional savings research that does not ascribe technological influence on saving behaviours. Third, the study addresses gaps in our understanding of digital savings behaviour that have been overlooked in previous research. The identified digital savings behaviours represent new knowledge that opens up a new line of inquiry for future research. Fourth, it contributes to financial inclusion literature by providing new insights from the sub-Saharan African context where research on savings-related consumer behaviour is rarely examined. Practically, the study establishes the usability & utility of digital

savings as a critical financial inclusion tool by demonstrating the plethora of opportunities it offers beyond the intentions of providers. As such, it aims to assist researchers, product owners, providers, and policymakers in understanding how digital savings tools can help the unbankable to meet their goals. Given Nigeria's status as a major player in the African economy, findings from this study can inform policy actions across the sub-Saharan region. Overall, this study aims to optimise digital savings under the financial inclusion agenda by providing a people-centred approach to innovation design.

The remainder of this paper is organised as follows: Section 4.2 presents a review of the existing literature, highlighting the research gaps this study aims to address. Section 4.3 describes our research methodology, including the data sources, collection methods, and analysis techniques used. Section 4.4 presents the findings, while Section 4.5 discusses our findings and proposes two extensions to the affordance theory. In Section 4.6, we highlight our key research contributions and implications, while Section 4.7 concludes the paper.

4.2 Literature Review

As a vital tool for driving financial inclusion[10], the benefits of access to savings accounts for individuals and households have been well-documented in previous financial inclusion literature. Evidence from research demonstrates that even a simple savings option, such as a lockbox, can significantly improve the downstream financial

[10] Financial inclusion is also known as inclusive finance or financial inclusivity.

outcomes of users, including financial decisions and access to credit (Aggarwal et al., 2020b; Steinert et al., 2022). Furthermore, having a savings account can enable better health savings and provide a safety net for emergencies (Dupas and Robinson, 2013b), as research has revealed that savers tend to have a higher level of financial resilience than non-savers (Hussain et al., 2019).

Previous research has also highlighted the several economic benefits of access to traditional savings accounts. Studies have found that access to savings accounts is linked to rural poverty reduction (Burgess and Pande, 2005) and reduction in short-term debt (Kast and Pomeranz, 2014), can generate business growth (Dupas and Robinson, 2013a), and increase employment and income levels among low-income individuals (Bruhn and Love, 2014). Additionally, access to savings accounts with zero fees has been shown to lead to improvements in household finances such as the ability to cope with shocks and investment in health and food (Prina, 2015). Specialised savings accounts, such as commitment savings accounts, have also been found to have positive outcomes, including increased savings (Ashraf et al., 2006), female empowerment (Ashraf et al., 2010), higher agricultural production, and improved household expenditure (Brune et al., 2011). Overall, these studies demonstrate that saving is an important roadway to escaping poverty (Dupas and Robinson, 2013a) and that formal finance can play a critical role in achieving this goal (Burgess and Pande, 2005; Brune et al., 2011).

Moving away from traditional banking, some scholars have studied the potential of digital channels for accessing financial services and the viability of mobile money as a vehicle for digital savings. While mobile money is more commonly used for payments and transfers than savings (Dupas et al., 2014), studies such as Lwanga Mayanja and Adong (2016) have shown its potential as a financial inclusion tool and a saving mechanism. For example, Munyegera and Matsumoto (2018) found that mobile money can increase the propensity to save among user households. Osei-Assibey (2015) provided insights into using mobile money in traditional Susu micro-saving practices in Ghana and found factors such as awareness and education influence users' behavioural intention to adopt and use mobile money. Similarly, Ouma et al. (2017) found that providing financial services via mobile phones promotes the prospect of saving and the amount saved. Aggarwal et al. (2020a) revealed a considerable demand for mobile money as a savings vehicle in Malawi. However, other scholars have found mixed results. For example, Cobla and Osei-Assibey (2018) found that active use of mobile money triggers student spending behaviour in Ghana, and Van Hove and Dubus (2019) found that users who are well-equipped are less likely to save on mobile money. Ky et al. (2018) did not find a link between using mobile money and saving for a predictable event. However, the study did find that using mobile money increases the prospects of saving for health emergencies among vulnerable groups such as rural dwellers, less educated individuals, females, and individuals with irregular incomes. Overall, research on the use of mobile money as a savings vehicle is inconclusive and more research is required to understand its potency.

From a theoretical standpoint, the literature on digital savings is limited, with most studies coming from industry publications that lack theoretical foundations and peer review. The lack of empirical and conceptual studies available for review attests to the nascent nature of the field (World Bank, 2019; von Allmen et al., 2020). Regardless, the limited scholarly works have found mixed results regarding the uptake of digital savings, with some showing that the majority of users are predominantly urban, high-income households who are well-educated and financially literate, rather than the targeted unbankable and low-income population (Nan, 2018). Others have found a rapid uptake of digital savings products during promotional periods, but a decline once promotions ended (Bharadwaj and Suri, 2020). Nevertheless, these studies suggest that digital savings could be an essential gateway to secure loans, among other benefits.

4.2.1 Savings and Behaviour

Behaviour is important in financial inclusion discussions as it plays a vital role in the financial decisions made by individuals and households. The institutional saving theory posits that access to savings instruments can influence saving preferences and behaviours (Han and Sherraden, 2009; Heckman and Hanna, 2015; Ansong et al., 2021). Unfortunately, there is underdeveloped financial inclusion literature linking digital savings to behaviour. One notable exception is the study by Bharadwaj and Suri (2020), which found that promotional incentives only led to momentary uptake and usage of digital savings. Overall, given the close association between savings and growth,

understanding the link between savings behaviour and financial inclusion is crucial for policy analysis (Agrawal et al., 2009) and understanding how savings can drive financial inclusion.

In the absence of digital savings studies, scholars have turned to examining the effects of bank account ownership on savings behaviour. These studies supplement the growing debate on what drives an individual's savings behaviour, highlighting that financial, social, and behavioural incentives can lead to positive changes in savings behaviour. For example, studies such as Schaner (2018) have observed that high interest rates on savings accounts can stimulate positive changes in savings behaviour, as they recognise that high costs can discourage the unbankable from taking up formal savings. Kast et al. (2012) conducted randomised field experiments on low-income entrepreneurs in Chile and gathered that self-help peer groups, rather than high interest rates, are an effective tool for improving savings behaviour. The study also found that feedback via text message was crucial in helping individuals track their behaviour (Kast et al., 2018). Karlan et al. (2016) provided evidence that monthly reminders effectively drive the savings behaviour of customers with commitment savings accounts. In their study, Dalla Pellegrina et al. (2021) found that motivational effects in the form of goal setting and commitment reinforced savings behaviour. This aligns with the findings of Brune et al. (2011), who claimed that commitment savings accounts have significant effects on savings behaviour. These findings not only support the goal-setting theory, which argues that setting specific, challenging goals leads to increased performance (Locke and Latham, 2006), but they also align with evidence

showing the importance of social incentives and the limitations of financial motivations in driving savings behaviour (Kast et al., 2012).

Despite the belief that financial literacy is a crucial component for improving savings behaviour, studies have shown that it has limited effects on low-income individuals (Fernandes et al., 2014). They argued that for financial literacy to be effective, it must be immediately acted upon and tied to specific behaviours. Additionally, studies such as Dupas et al. (2014) have revealed that a lack of trust in financial institutions can also negatively impact an individual's savings behaviour.

Looking at the overall picture, it is clear that there is a lack of research on behaviour in financial inclusion studies. Instead of adding another study that focuses solely on the effectiveness of bank accounts for saving or mobile money as a means of digital savings, it is essential to understand the behaviour of the unbankable towards existing digital savings tools. Understanding the behaviour of the unbankable towards digital savings is crucial in understanding the scope of financial inclusion and developing financial products and policies that are tailored to their needs (Hayashi and Minhas, 2018).

The significance of studying the behaviour of individuals towards digital savings is paramount in understanding the gap between the potential and actual usage of these services. Early scholars like Turner (1982) recognised the importance of understanding user behaviour in relation to information systems (IS). Analysing issues from an individual perspective reveals behavioural patterns such as individual differences and

similarities, user attitudes, knowledge, problem-solving ideas, and impediments to achieving personal goals (Turner, 1982). In a rapidly changing society occasioned by technological advancement, behavioural research remains a crucial tool in understanding user preferences and decision-making processes (Arnold, 2018), particularly in developing countries. The behavioural lens of digital savings research is expected to examine and interpret the theoretical principles that underpin the habitual patterns of decisions associated with digital savings. The current study aims to address the lack of behavioural research in digital savings and responds to calls from scholars such as Dahlberg et al. (2015), Raji (2017), and Nan and Markus (2019), for further examination of the behaviour of the unbankable towards digital financial services.

4.3 Methodology

This study employs a qualitative research method to examine digital savings usage among the unbankable. This approach is particularly well-suited for understanding the subject as it allows for rich, thick descriptions of the experiences and perceptions of the unbankable regarding digital savings. Qualitative research focuses on making sense of a phenomenon through the individual social experiences and constructed realities of the participants (Hallberg, 2006). This method is useful in this context as it allows researchers to gain a deeper understanding of the social worlds of the unbankable and how they use digital savings to meet their goals. Given the limited research on this topic, particularly in sub-Saharan Africa, a qualitative approach is

useful to provide insights into the understudied subject of digital savings among the unbankable.

In order to further our understanding of the unbankable and their behaviour towards digital savings, we adopted some elements of the grounded theory approach to gain new insights into the unbankable population. This approach emphasises the importance of constructing theory from data, rather than approaching the data with pre-existing theoretical assumptions (Corbin and Strauss, 2015, p. 6). It also allows the development of theories that are based on empirical data gathered and analysed systematically (Matavire and Brown, 2008; Urquhart et al., 2010; Noble and Mitchell, 2016). Additionally, by utilising the elements of grounded theory, we were able to engage in a continuous interaction between data collection and analysis within the context of information systems phenomenon.

The use of grounded theory in scholarly research is widely accepted for several reasons. First, it provides an ideal approach for understanding the behaviour of the unbankable towards digital savings due to the limited empirical insights and theoretical lenses in the literature. Second, it offers specific stepwise procedures and techniques for conducting inductive research (Charmaz, 2004). Third, it is a proven method for exploring and developing a context-based understanding of phenomena in information systems (Urquhart et al., 2010). Lastly, grounded theory has been successfully utilised in investigating social behaviour in emerging research areas (Wiesche et al., 2017); therefore, making it applicable to this research.

4.3.1 Data Collection

The study was structured in three phases to ensure a thorough examination of the research question. The *pilot phase* established the framework for the study, including the design and testing of the semi-structured interview protocol. The *comprehensive phase* delved deeper into the initial concepts and themes, collecting more data to support the findings. Lastly, in the *concluding phase*, the researcher further refined the concepts and themes developed in the earlier phases. A purposive sampling method was employed to target a specific group among the unbankable - individuals who do not own a bank account but use digital savings. Non-users of digital savings were excluded from the study as the objective was to gain a deep understanding of the personal stories and experiences of those who actively use digital savings.

A semi-structured interview protocol was prepared as a blueprint for the first set of interviews. This protocol consists of a set of preliminary questions (see Appendix) followed by probing questions to explore the topic in detail. The interviews were divided into four segments to cover various aspects of the participants' experiences. The first segment aimed to understand their personal characteristics, employment status, or business activities. The second segment delved into their financial literacy, money management practices, and attention to their finances. The third segment explored their usage and attitude towards digital financial services. The last segment focused on their digital savings behaviour and how they achieve their financial goals. Other questions emerged during each interview to probe further and understand their

story in depth. The interview protocol was continuously refined as the interviews progressed based on the insights and patterns emerging from the data.

Each interview was audio-recorded, typically lasting between *30 minutes* to an *hour*, and conducted in the language the participant felt most comfortable with, be it English or local languages like Pidgin or Yoruba. To ensure consistency and organisation, all interviews were transcribed in English and analysed using grounded theory open coding procedures.

In this study, a total of 45 participants were interviewed, ranging in age from 18 to 52 (see Table 4.1). They were residents of suburban areas in the cities of *Abeokuta, Benin, Ilorin, and Lagos*, located in southern Nigeria. These participants were recruited from digital savings agent kiosks, marketplaces, trader stalls, and other public spaces. The sample was composed of 25 males and 20 females, representing a variety of low-income occupations such as *apprentices, salespeople*, *bricklayers*, *gardeners*, *labourers*, *painters*, and *petty traders*. Their educational backgrounds ranged from illiteracy to tertiary degrees. The majority of the participants were users of popular digital financial services in Nigeria. The participants represented a diverse range of age groups, education levels, and social-economic backgrounds.

The sample size of this study was not predetermined. Instead, the principles of grounded theory were applied (Braun and Clarke, 2021) and data collection continued until *theoretical saturation* was reached. This is the point at which the themes, patterns, and relationships between categories have been fully explored and additional data did

not bring new insights (Nelson, 2017; Braun and Clarke, 2021). To ensure the quality and depth of the data collected (Fusch and Ness, 2015), recruitment of new participants was halted when subsequent interviews only reinforced the emerging theory. This approach underscores the richness, depth, and diversity of the data rather than focusing on its quantity (Braun and Clarke, 2021).

Sex *(N = 45)*	**Age** *(N = 45)*	**Education** *(N = 45)*	**Marital Status** *(N = 45)*	**Occupation** *(N = 45)*
Male: *25*	18-20: *5*	Non-literate: *2*	Single: *26*	Apprentice/salespeople: *8*
Female: *20*	21-30: *24*	Primary: *11*	Married: *19*	Bricklayer: *4*
	31-40: *12*	Secondary: *24*		Farmer: *2*
	41 & above: *4*	Tertiary: *8*		Gardener: *3*
				Labourer: *3*
				Painter: *2*
				Petty trader: *12*
				Phone charger: *1*
				Self-employed: *4*
				Student: *3*
				Tailor: *3*

Table 4.1: Demographic Data of the Respondents

4.3.2 Data Analysis

The data collected were analysed using a process termed *constant comparison*. This method, which is central to grounded theory, involves systematically comparing all aspects of the data (including emerging codes, categories, and properties) to identify variations and similarities in the data (Hallberg, 2006; Corbin and Strauss, 2015, p. 7). This process was carried out concurrently with data collection. The researcher listened to the audio recordings, read field notes, and reviewed interview transcripts to become familiar with the data. This process, supported by proper notetaking, ensured that interpretations were not lost in transcription. The data was then coded into themes

that summarised the meaning embedded in empirical data. This was followed by open coding for line-by-line interpretations, focused coding for conceptual analysis, and axial coding to identify relationships between categories (Hallberg, 2006). Finally, the analysis revealed the end goals the unbankable intend to achieve using digital savings, their motivations for choosing and using digital savings methods and how they perceive such financial solutions. Additionally, the study identified different traits and patterns among the respondents and grouped them accordingly. Overall, through this iterative process, patterns of actions and actualisation were identified, prompting us to seek theoretical positions that explain this phenomenon. This inquiry led us to the *Affordance theory,* which describes the action capabilities as *affordances*.

4.3.3 Analytical Lens

The affordance theory is a framework that explains the interactions between an object and an agent. It was first conceptualised by Gibson (1977) in the ecological domain to describe the reciprocity between an actor and the environment, and how the environment offers certain action possibilities (affordances) that an actor can perceive and use (Hutchby, 2001; Chemero, 2003). In the field of information systems (IS), the theory has become a guiding tool for understanding the relationships between technology and social actors (Lanamäki et al., 2016), and for identifying the underlying mechanisms that shape these interactions (Bygstad and Bergquist, 2018). Norman (1988) introduced the affordance theory into IS literature by applying it to human-computer interaction (HCI), and other scholars in the IS field have since used it to

explain various research phenomena (Markus and Silver, 2008). For example, Pozzi et al. (2014) has argued that the affordance theory recognises that affordances exist as a cognitive process, shaped by the interplay between an IT artefact and an actor, and that these affordances can lead to specific behaviours.

We adopt the position put forward by Volkoff and Strong (2013) that defines affordance as "*the potential for behaviours associated with achieving an immediate concrete outcome and arising from the relation between an object (e.g., an IT artefact) and a goal-oriented actor or actors."* This definition emphasises the instrumentality of each element in actualising the affordance (Bygstad et al., 2016; Hazra and Priyo, 2020). Bygstad et al. (2016) further explain that affordance solely refers to "*the possibilities arising from that relation for actions or behaviours that will lead to a particular immediate concrete outcome*."

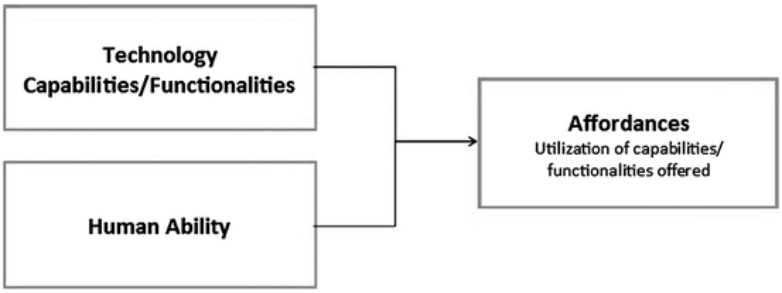

Figure 4.1: IS stance on Affordance by Lanamäki et al. (2016)

Lanamäki et al. (2016) suggested that the relationship between technology and goal-driven actors is inseparable, with affordance emerging from this connection (see Figure 4.1). For users, technology affordance recognises the potential for achieving outcomes through the use of a device that would not be possible without it leading to the discovery of unexpected uses (Pozzi et al., 2014). Rather than focusing on technology

features, this theory emphasises the specific uses of a device (Bygstad et al., 2016). It is important to note that multiple affordances can arise from a single actor-object relationship (Volkoff and Strong, 2013), as different combinations of actors and objects can enable various affordances. However, it is also possible for actors to not perceive an affordance at all (Hutchby, 2001).

In our context, while affordances arise from the interaction between an actor and technology to generate actor-technology action possibilities known as *technology affordances* (Faraj and Azad, 2012), there are also action possibilities between actors and human agents within the digital savings ecosystem. Hence, we focus on the joint *socio-technical affordances* that arise from both interactions. In social behaviour, affordance theory can be applied to understand how customers use digital financial services to meet their everyday needs (Hazra and Priyo, 2020). By examining the needs and goals of the users, our research aims to identify the various affordances that digital savings can offer, based on the competence and knowledge of users. The theory provides a framework for understanding the diverse perceptions and usage behaviours of information systems, specifically digital savings, and how they affect social change. Understanding the affordances of a particular technology can predict its effect on user behaviour and recognise that actors can devise alternative or innovative methods of using technology beyond the designer's original intentions. This study responds to calls by scholars to study affordances as a tool for understanding IT-enabled social change (Anderson and Robey, 2017).

We identified four different types of digital savings usage behaviours demonstrated by the unbankable: relationship-dependent, agent method-driven, market-driven, and tech-forward. These behaviours are discovered by analysing the different ways in which the unbankable use digital savings and the motivations behind their usage. Using a sample of 45 interviewees, we found that 9 participants exhibited relationship-dependent behaviour, 7 were agent method-driven, 12 were market-driven, and 17 were tech-forward. Additionally, we identified three main categories of affordances associated with digital savings – financial, relationship, and transactional. These affordances were determined by analysing patterns and themes in the data. *Figure 4.2* shows some representative quotes on how we coded the salient affordances of digital savings. *Table 4.2* presents a summary of the four behaviours, the differences across these behaviours, and their perceived salient affordances. The detailed findings are discussed in the next section.

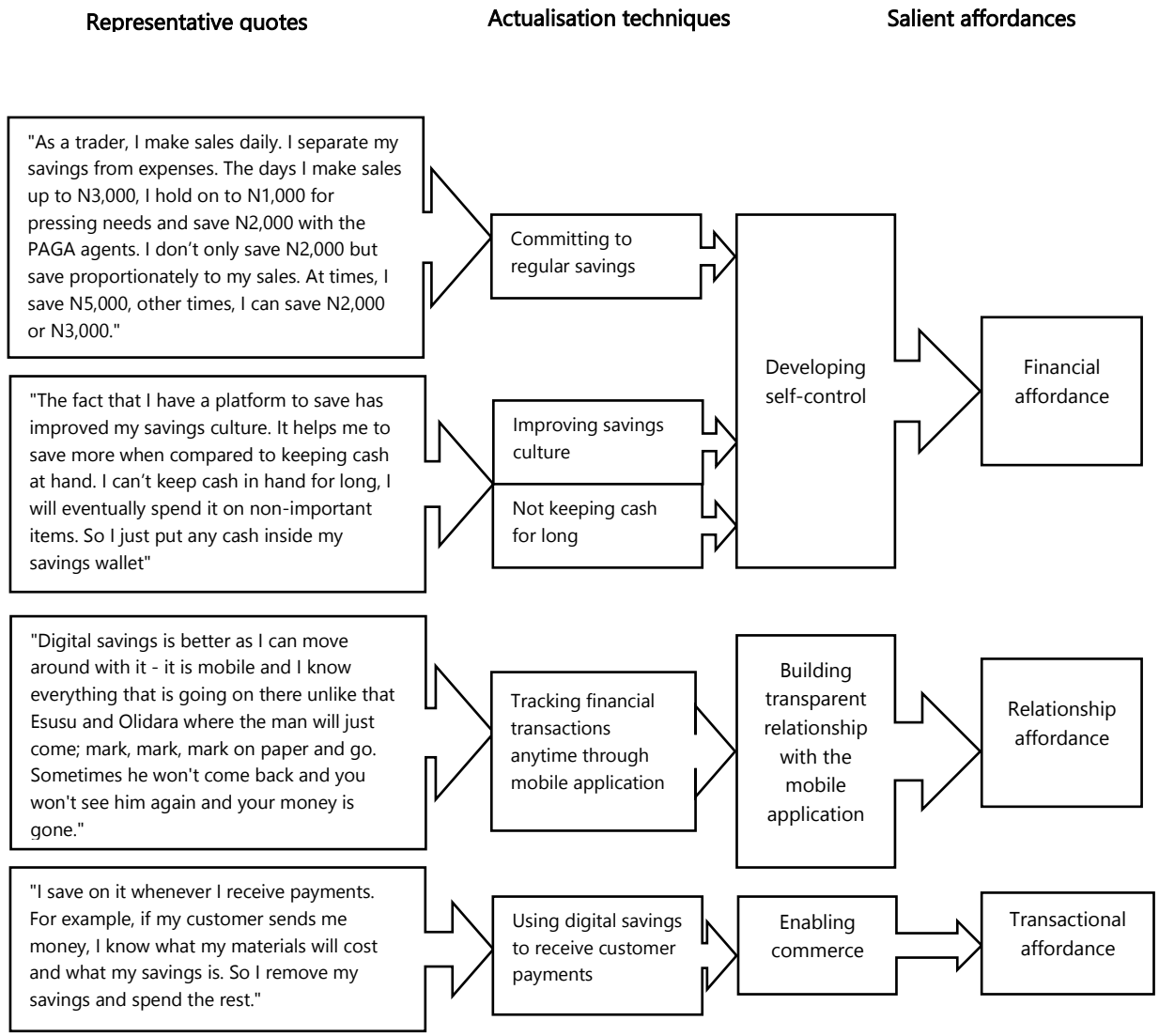

Figure 4.2: Sample codes of perceived digital savings' salient affordances

4.4 Findings

In this section, we will first highlight the four distinct digital savings usage behaviours that emerged from our data analysis. These behaviours reflect the different ways in which the unbankable interact with and utilise digital savings to meet their financial needs and goals. Following that, we will then present an overview of the affordances of digital savings that were identified through our study. These affordances are the potential actions and benefits that the unbankable can achieve through the use of digital savings platforms.

4.4.1 Digital Savings Usage Behaviour of the Unbankable

The usage of digital savings among the unbankable population can vary depending on their individual motivations and needs. Our analysis of the respondents identified four distinct usage behaviours, each reflecting different patterns of usage and motivated by different factors. These behaviours, known as *relationship-dependent*, *agency method-driven*, *market-driven*, and *tech-forward,* also exhibit a unique set of affordances.

I. The Relationship-Dependent Behaviour

The usage of digital savings among some sections of the unbankable is influenced by their pre-existing relationship with the digital savings agents. These users have an ongoing personal relationship with the agents that pre-dates the use of digital savings platforms and were introduced to the platform through this relationship. Without this connection, these users may not use digital savings. They also perceive the benefits

and affordances of the platform through the lens of their relationship with the agents, and the trust they have in the human personalities involved enhances their trust in the platform. This is illustrated in the statements from two respondents below:

"I know the agent; she introduced it to me and told me it is good for savings. Hence, I decided to try it because of my relationship with her. I can trust her; we live in the same house". (Female, 35, petty trader).

"I have been using it for more than a year, and there is no regret. I know the agent and her relatives, so she cannot elope with my funds." (Female, 18, salesgirl).

This behaviour is common among individuals using basic mobile phones and conducting all their savings transactions through the nearby agent outlets. These individuals do not directly interact with the digital interface but instead rely entirely on digital savings agents to carry out their financial transactions.

II. The Agency Method-Driven Behaviour

Individuals who are accustomed to using informal thrift collection methods for savings, such as "*Ajo*" or "*Esusu*", tend to use digital savings platforms in a similar manner. *Ajo* or *Esusu* is a traditional microfinance banking model where agents or collectors receive a fixed sum of cash from traders daily or at a predetermined frequency and pay them back in a lump sum at maturity. These individuals are familiar with the workings of an agent network and rely on agents to facilitate their financial transactions. They tend to use digital savings based on their prior experience with informal thrift collection methods, where agents serve as intermediaries between them and their savings. Below is a quote from one of the respondents confirming the use of *Ajo*:

Before now, I was using Ajo. The collector comes around every day to collect my savings. I noticed that this (digital savings) method is similar to what I am already used to. That is why I am using it. Though, instead of coming to my store, I go to the agent at the end of the day to save my money" (Female, 24, shop assistant).

These agent-based informal practices are underpinned by high levels of trust and integrity. Individuals who are familiar with these methods can transfer their trust in the traditional methods to digital savings platforms, even if they have had no prior experience with the digital platforms or their agents, as described by one of the respondents:

I use digital savings because they are like Ajo that I used in the past. This has helped me to understand how this method works. So it is also easy for me to trust these agents" (Male, 27, phone charger).

III. The Market-Driven Behaviour

The need to facilitate seamless trade and commercial transactions is a factor that drives some individuals to use digital savings. Market traders and vendors who use digital savings in their daily activities primarily use the platform to fulfil their market-related needs, as expressed in the statement below:

"I use it to send money to the sellers I buy my work materials from. My customers also send money to my wallet to pay for the jobs and services I have rendered to them" (Male, 29, self-employed).

In many cases, the ability to convert sales and satisfy cash-strapped or cashless-preferring customers is a benefit that many market individuals have found through using digital savings features:

"Oftentimes, after rendering services to our customers and they don't have cash for them to make payment, I ask them to use the platform to send money to the wallet. Many of our customers pay into my wallet" (Male, 29, self-employed).

In addition to achieving their market or business objectives, digital savings can also assist these traders in achieving their personal financial goals. For instance, they can use the platform to convert their sales proceeds into savings, which can help them achieve their personal financial objectives:

"My customers also pay me through this method. When they send me money, I will keep it there as my savings" (Female, 20, trader).

IV. The Tech-Forward Behaviour

Technology plays a crucial role in shaping the usage behaviour of digital savings among the unbankable. Despite common misconceptions, some unbankable individuals possess a high level of digital literacy and are comfortable using emerging technologies. This group tends to have a higher level of education and exposure to technology, which allows them to use "mini smartphones" and social media effectively.

Even though tech-forward individuals are capable of opening a traditional bank account, they remain unbankable due to various factors such as lack of identification or proper documentation. Despite this, they still use digital savings platforms to manage their finances, as described by two respondents:

"This is an opportunity for me to save well as I cannot use the bank…I don't have an ID or a voter's card to open an account" (Female, 30, trader).

"I can register via the mobile app using my phone number, full name, and a few personal details. Unlike the banks, I did not submit any document" (Male, 33, self-employed).

Their higher level of digital literacy leads them to seek alternative financial services such as digital savings. These tech-forward individuals tend to access digital savings

platforms directly through mobile channels and have the ability to initiate and complete financial transactions independently, without the need for assistance from an agent. This instance is described by two respondents:

"I access it via my phone, and I have a wallet number. It is beneficial and easy to access" (Male, 33, self-employed).

"I do not need agents for my savings. Customers can send money into my wallet directly" (Male, 28, painter).

These users can navigate and use digital savings platforms with ease. This allows them to have greater control and transparency over their finances, as they can monitor and track their savings and other financial transactions.

4.4.2 Affordances of Digital Savings

Our analysis revealed a variety of affordances associated with digital savings as perceived by the unbankable individuals we interviewed. These affordances emerged from the respondents' interactions with the different digital savings platforms. They include both financial and non-financial possibilities for action provided by the financial solutions. Of all the usage behaviours, only those who are market-driven and tech-forward actualise the three classes of affordances: financial, transactional, and relationship (see Table 4.2). Meanwhile, agent-driven behaviour reveals primarily financial affordances.

Types of Behaviour	Motivations	Descriptions	Primary Touchpoints	Salient Affordances of Digital Savings
Relationship-dependent	Pre-existing relationship with people who become agents	They know the agents of digital savings	Agents	Financial and relationship (with agents) affordances

Agent method-driven	Familiarity with the agent-based savings method	They know the mechanism of saving money through agents and trust the digital savings agents by default	Agents	Financial affordances
Market-driven	Transactional needs	They use digital savings for ease of commercial transactions	Agents	Financial, relationship (with agents) and transactional affordances
Tech-forward	Digital Literacy and inclination for modern technology	They leverage their digital literacy to access digital savings	Mobile	Financial, relationship (with mobile apps and peers) and transactional affordances

Table 4.2: Four classes of digital savings behaviours

I. Financial Affordances

Digital savings products offer a spectrum of financial affordances, or opportunities for financial actions, to the unbankable. The majority of the affordances identified in the interactions between the unbankable and digital savings products are financially related. As a financial solution, digital savings products provide alternative pathways for accessing financial services. Patterns emerged from data to reveal five types of financial affordances perceived by the respondents, which are: *accessing financial services*, *developing financial self-control*, *ensuring the safety of savings*, *developing safeguards to absorb shocks*, and *achieving financial goals*.

Accessing financial services

Digital savings tools afford the unbankable the opportunity to access a wide range of formal financial services through financial service agents (FSAs) or digital channels, regardless of their proximity to a physical bank. This alternative to traditional banking services enables the respondents to access the basic financial services they require for their day-to-day activities, without the need for a traditional bank account and the associated challenges:

"I send money to my family using PAGA. I do not have a bank account; banks have too many problems" (Male, 35, gardener).

Transactions such as sending and receiving money, bill payments, and savings are made possible through the use of these platforms as described by some of the respondents in our study:

"I use it to pay and receive money. I also use it to save." (Female, 22, part-time student).

"I ask people to send money to my PAGA wallet. Even if it is for money I need urgently, they will send it to my wallet, and I will cash out at the agent's kiosk." (Female, 35, petty trader).

By deploying digital savings platforms, providers can offer access to financial services to individuals who may be excluded from traditional banking services. The presence of financial service agents (FSAs) within the digital savings ecosystem allows for greater reach in serving the unbankable population, including those who may be non-literate or unable to use mobile phones for financial transactions. Some of our respondents reported relying on agents to conduct transactions, as represented in the statement below:

"Yes, those that went to school well can do it on their phone, but for me, I am not well educated, so I can still use the agents." (Male, 35, gardener).

By utilising digital savings, the unbankable can also access financial services through mobile channels such as mobile apps or USSD. This allows for the ability to conduct financial transactions remotely, regardless of location, which eliminates the need for physical presence or travel. This is particularly beneficial for tech-savvy users who may not be able to access financial services through traditional means, as stated by respondents:

"It has helped to save a lot, and it has relieved me of stress, the stress of going out to do transactions or to make payments. So, I can just be in my place of work, while I am at home or anywhere and do my transactions." (Female, 33, tailor).

"It has made everything easy. Most of the time, I stay in my house and do whatever I need to do without the stress of going out to the bank or anywhere and queue. It is easy, you can stay in your house or anywhere and use it; it is mobile. You can even be driving and park in one place, do your transaction and continue driving. As long as you have airtime on your phone. You can check your balance anytime, any day." (Male, 28, self-employed).

Digital savings platforms offer an accessible alternative to traditional banking services by providing a way to open an account or wallet with minimal documentation requirements, regardless of the channels used. This eliminates the need for extensive documentation, which is often a barrier for the unbankable population who may have difficulty obtaining and providing the necessary paperwork. As a result, digital savings provide a means for the unbankable to access formal financial services and bridge the gap of financial exclusion.

Developing financial self-control

Digital savings offer the unbankable the ability to establish financial self-control by enabling them to commit to regular savings, regardless of the amount available. The features of the digital savings platforms allow them to make the decision to not hold cash for extended periods, as they understand that keeping cash on hand or at home increases the likelihood of spending it. Instead, they prefer to save money in their digital wallets once they are introduced to digital savings options. One respondent's experience illustrates this position well:

"I save more. It encourages and helps with saving. Because once you have physical cash, you would spend more than when you put it in a wallet" (Male, 28, self-employed).

To mitigate the temptations associated with keeping cash, respondents use digital savings to develop a habit of saving regularly, often daily, particularly for petty traders. This commitment to regular savings helps them accumulate savings over time without withdrawing funds until a pressing need arises. While they have the flexibility to withdraw their funds at any time without penalty, the digital barrier (between the users and their money) that digital savings provide can help the unbankable to maximise their saving capacity. Two respondents highlighted this below:

"I do my savings with PAGA almost on a daily basis. If I need a small amount for household needs, I will spend the loose cash with me. I will not withdraw my savings. I only withdraw when the money needed is huge, and I do not have the cash for it. Hence, my withdrawals are based on needs. Except for unforeseen occurrences and emergencies, I save for 2 to 3 months before I make a withdrawal." (Female, 35, trader).

"For example, in OPay, I can keep my money in my wallet for as long as necessary without withdrawing it, and I would even earn interest on it. Most times, I save up to three months or longer before the withdrawal. I only withdraw when an urgent need arises, and I am short of cash." (Male, 22, self-employed).

In addition to the digital barrier, the agents provide a level of oversight that can help the unbankable to develop self-control. Digital savings agents serve as the *bridge to the cash* the users must *mount to* access their savings, thus consistent with Maurer et al. (2013). By interacting with the agents, users are held accountable for their savings habits and are encouraged to maintain consistency in their savings. This regularity in saving helps them to achieve their financial goals in the long run.

In other cases, some providers offer a feature that allows users to lock their savings in their wallets for a chosen period, thus preventing them from accessing their locked funds before maturity. Users can withdraw their funds at maturity or extend the lock period. However, some providers may allow withdrawal before maturity but with a penalty to discourage this behaviour. This further reinforces the culture of saving among the unbankable, consistent with the assertion by Jones and Gong (2021) that digital savings can help to mitigate self-control problems. One respondent echoed this in the quote below:

"It helps me to save easily. It feels like I am putting my money in a fixed deposit like for those using the banks. I will not withdraw unless there is a pressing need. It helps me to be disciplined" (Male, 28, painter).

Overall, digital savings provide the unbankable with the opportunity to develop self-control and better manage their finances.

Ensuring the safety of savings

Digital savings afford the unbankable the opportunity to ensure the safety of their savings. The unbankable often rely on physical cash to trade, pay, and save, which poses massive risks as carrying cash around or storing it at home exposes them to theft or robbery. Digital savings eliminate these risks and the fear of handling cash by providing a secure and accessible platform for saving money. Without digital savings, our respondents would use risky informal methods, making them more vulnerable. One respondent described how using digital savings eliminates the risks and fears associated with cash:

"One does not need to be walking around with money; this can be risky. I can keep it in my wallet and access it at any time. For the savings, my number one reason for choosing it is because of security reasons so I can keep my money safe" (Male, 29, self-employed).

Using digital savings instead of traditional informal methods, such as thrift collections, can also protect users from fraud. Respondents reported feeling more secure storing their money in digital wallets as it assuages their chances of falling prey to fraudulent middlemen who may abscond with their savings. These digital savings platforms are regulated and provide a level of security and oversight that is not present in traditional informal methods. Our respondents further demonstrated the risks associated with unregulated informal methods:

"Before, I normally used a local saving box, but I no longer use it. When my grandma used Esusu, she was duped by her thrift collector; the man ran away with her money. Those methods are stressful and not very safe." (Female, 20, trader).

"I used Esusu, but the man ran away with my money. I did not see him again. This happened to me twice. I no longer use them. I decided to change to this wallet method" (Female, 29, trader).

Digital savings can also provide a means for the unbankable to protect their savings from social appropriation. Social appropriation is the exploitation of an individual's resources by family and friends (Jakiela and Ozier, 2015). Many respondents reported using digital savings as a way to conceal their money from family and friends, which can help them to avoid the pressure to share or lend their resources. This pressure can hinder their financial stability and growth. The findings of this study, thus, align with previous research by Chiapa et al. (2016) and Steinert et al. (2022), which has shown that digital savings can address issues of social appropriation (Jones and Gong, 2021), especially in poor communities in sub-Saharan Africa. This was validated by two

respondents who specifically mentioned using digital savings to hide money from their families:

"This is a very good method. My family will not even know that I have money. It is whatever amount I tell them I have that they will know. I use the agents, I do not have it on my phone, so it is easy to hide my money…I can do whatever I want with it (laughs)" (Female, 35, trader).

"It is a good method for saving. I can even hide my money so that my husband will not know when I have money." (Female, 32, petty trader).

Developing safeguards to absorb shocks

Digital savings also afford an opportunity for individuals to develop safeguards against financial shocks. By allowing users to increase savings over time, digital savings provide a safety net for unexpected financial events. For vulnerable populations, a convenient savings tool can help them prepare in advance for any potential emergencies or needs. This is in line with the argument from Jones and Gong (2021) that having a digital savings tool can significantly enhance an individual's shock-coping ability. A respondent detailed this below:

"I also use it to meet my unexpected needs. You know, at times, urgent needs come up that you may not plan for. Using this method to save ensures that I am not caught unawares" (Male, 29, self-employed).

Achieving financial goals

Digital savings provide users with the opportunity to achieve their financial goals. Our respondents, from diverse backgrounds, shared the common theme of using digital savings platforms to achieve their personal and business goals. These platforms serve as a means to actualise these financial goals. For example, some of the respondents'

goals include saving enough money to return to school, as highlighted in the following quote:

"I am a drop-out student, and I work as a salesgirl. I save using this method in a bid to raise funds to further my studies…. One of my main goals is to go back to school. Saving my daily allowances and monthly salary on PAGA will help me actualise this dream. I will withdraw my savings and return to school when my savings are enough to take me through school" (Female, 18, salesgirl).

For others, their financial goals include saving enough to expand their business and become financially independent. For instance, one respondent stated they use digital savings to save to grow their business:

"Every day when I make sales, I will put my profit in the wallet and save it for a month. Once it is up to a month, I will take it and put it back in my business to boost it" (Female, 24, shop assistant).

Digital savings thus represent a pathway to expand financial inclusion and help users to reach their financial aspirations.

II. Relationship-based Affordances

As seen from our analysis of the interactions between the unbankable and digital savings ecosystems, relationships play a crucial role in driving the uptake of digital savings. These relationships take various forms and generate several affordances, including *building transparent financial relationships with agents*, *developing transparent relationships with the mobile app*, and *staying in vogue among peers.* These relationship-based affordances offer users the potential to achieve their daily goals and cultivate meaningful connections with both humans and technology.

Building transparent financial relationships with the agents

Digital savings allow users to develop transparent relationships with the digital savings agents, which are built on trust and transparency. For some individuals, this relationship is an important factor in their choice to use digital savings. These individuals, who may be considered *'relationship dependent,'* find that their pre-existing ties with the agents are strengthened through frequent interactions and the development of a cordial relationship. This closeness can lead to benefits such as being able to issue verbal transfer instructions to agents, as highlighted by one of the respondents:

"At times, when I need to buy some goods from my merchants, I call my PAGA agent to transfer the funds from my account to them." (Female, 39, trader).

One of the respondents shared that through their consistent use of digital savings, they were able to earn favours and incentives from their agents:

"I have developed a close relationship with the agent to the point that she loaned me N30,000 in the past, which I returned weeks later" (Male, 33, food seller).

However, this affordance is not as relevant for individuals who are tech-savvy or had previously used agency-based informal methods. This is understandable given the former interact more with the mobile channels and less with the agents, while the latter already have a level of trust established with agents in informal environments. This is reflected in the statement of one of the respondents who described their experience with agent-based methods:

"In the past, I have used thrift collection (Ajo)...That is the reason I use the agents" (Male, 22, apprentice).

Developing transparent relationships with the mobile application

Digital savings afford the unbankable the potential to develop a transparent relationship with the mobile application. This affordance is primarily actualised only by digital literates who are able to access and manage their savings and financial transactions directly through the mobile platform. The ability to view, monitor, and self-track their savings and other transactions is an advantage that sets digital savings apart from traditional offline methods, which do not provide digital records and footprints. This traceability and transparency of transactions are key factors in the appeal of digital savings to these digital literates, as described by some participants:

"I use it to enable me to know more about how I am saving. Like sometimes, I can just go through the history and see the amount I have saved this week or in a month" (Female, 22, student).

"It has also helped me to save more as it helps me to monitor and track my expenses better as I can view what I have spent." (Male, 22, self-employed)

This feature of digital savings eliminates the need to rely on agents for information and allows them to independently query and understand their transactions, thereby building trust in the platform, as reflected by another respondent:

"I will recommend it to others because it has helped me a lot. It is useful for monitoring one's financial transactions. I trust how it helps me track my expenses" (Female, 21, student).

Staying in vogue among one's peers

Digital savings can also afford tech-forward individuals the opportunity to stay current and relevant among their peers, creating a non-financial relationship with the mobile app. These users view using digital savings as a way to feel trendy and stay up to date

with the latest digital trends. They often play the role of *influencers* within their social network and are relied upon for information and recommendations on technology solutions such as digital savings platforms, as highlighted by two respondents:

"The world is going digital, and you have to follow digital trends…. I have recommended it to many of my friends to use." (Male, 28, self-employed).

"It is part of the new ways of doing things. If I cannot use the bank, this is the closest digital method I can use" (Female, 22, apprentice).

III. Transactional Affordance

Transactional affordance refers to the possibility of commercial transactions offered by digital savings. By using digital savings to receive payments for their goods and services, traders are able to conduct commerce efficiently and effectively. This transactional affordance enables them to expand their customer base and increase their sales, helping them to grow their business. The only transactional affordance revealed in our study is *enabling commerce*.

Enabling commerce

The ability to conduct transactions digitally is a key affordance of digital savings for the unbankable, particularly for traders. In a cash-dominant society like sub-Saharan Africa, our respondents, predominantly petty traders, noted that many of their customers still primarily use cash for purchases. However, the increasing adoption of digital savings platforms has enabled the unbankable to participate in commerce, as they can now use these platforms as a medium of exchange for buying and selling goods and services. For example, two respondents described this below:

"I receive payment for my goods via cash as well. At times, I will ask my customers to pay me via the agents." (Male, 32, pepper seller).

"My customers buy, and they pay me through the platform. I receive payments on the platform like three or four times daily" (Female, 29, petty trader).

Digital savings platforms have also become a valuable tool for sellers to satisfy and retain their customers. By accepting payments through these platforms, sellers can enable cashless purchases for customers who may be willing to buy but unable to do so because they have run out of cash. This not only helps to retain customers but also encourages repeat business as they can make purchases without the barrier associated with the lack of cash. This affordance was highlighted by several respondents, as described by two below:

"I use it to enable me to save and collect money from my customers. Some customers do not have cash, and it would be difficult to sell to them without it. When they transfer, I can confirm from my agent and make the sales I want." (Female, 20, petty trader).

"I can meet my customers' needs whenever they are facing challenges with payment because they are out of cash" (Female, 26, loan collector).

4.5 Discussion

In this section, we will delve into the key takeaways of the study and formulate propositions that align with the principles of grounded theory.

4.5.1 Motivations of Digital Savings Usage Behaviour

Our study sheds light on the digital savings usage behaviour of the unbankable, revealing the potential of digital savings to unwrap both financial and non-financial affordances for the unbankable, which may not be possible if excluded from formal

finance or rely on informal methods. Through our analysis, we identified four distinct usage behaviours that define how the unbankable use digital savings to achieve their personal and business goals, each motivated by different factors. This leads to our first proposition:

P1*: Digital savings usage behaviour among the unbankable is influenced by four underlying motivations – pre-existing relationships with agents, prior experience with agent-mediated methods, transactional needs, and digital literacy.*

Familiarity with digital savings agents can facilitate the use of digital savings (see Table 4.2). Much as geographical proximity (Medhi et al., 2009; Morawczynski, 2009; Gurbuz, 2017) and density of agents (Suri and Jack, 2016) are key drivers of using digital financial services, our study underlines the significance of having pre-existing relationships with the agents, who act as intermediaries for the digital savings platforms, as a key precursor to using the service. This is because the presence of a *known face* providing financial services within the community can build trust and confidence among the unbankable, making them more likely to use the service. This *communal familiarity* can spur interest in using digital savings within a specific locality, thus representing new knowledge in financial inclusion research.

Prior experience with agent-mediated methods, such as thrift collection, also plays a significant role in shaping individuals' trust and usage of digital savings. Respondents who have previously used these methods are more likely to trust and use digital savings platforms due to their familiarity and comfort with the agent-mediated model. Additionally, the flexibility and security offered by digital savings compared to

traditional methods are also contributing factors to the usage. For example, informal methods may not allow for the flexibility of withdrawing savings outside of the pre-agreed maturity window, even in case of emergencies. Besides, trust in middlemen within informal methods set-up is built through verbal agreements, despite the risk associated with their unregulated nature. It is important to note that familiarity with the informal methods can lead to *familiarity bias*, where individuals tend to prefer familiar alternatives (Cao et al., 2011). As such, they transfer their trust in informal agents to the digital savings platform, seeing it as a more regulated and formal version of their prior experiences. This highlights the importance of trust (Dziwornu et al., 2018; Xu, 2020) and trusted groups (David-West et al., 2021), and the role of human mediation (Medhi et al., 2009), in driving the adoption of financial services, such as digital savings, among the unbankable.

The third motivator for the usage of digital savings among the unbankable is based on transactional needs, specifically among individuals with market-driven behaviour. Many of the unbankable are self-employed (Demirgüç-Kunt et al., 2017) or petty traders, and their decision to use digital savings is primarily driven by their need to conduct commerce. These individuals turn to digital savings to receive payments from customers and to avoid losing sales that may arise if they are unable to accept cashless or tech-savvy customers (Rizwana et al., 2021). Digital savings have empowered these traders to become financially inclusive, not only to their customers but also to themselves. In addition to conducting transactions, these individuals have found ways

to convert part of their sales to savings to meet their business and personal financial goals.

Digital literacy is another motivator that shapes digital savings behaviour among the unbankable. Contrary to prior studies that assume the unbankable to be uneducated (Demirgüç-Kunt et al., 2017), primitive, elderly (Dupas et al., 2018) or unable to use digital technologies, our study identified a group of unbankable individuals who use digital savings without the need for agent intermediaries. These tech-forward individuals possess a higher level of digital literacy and are able to use mobile app-enabled digital savings and prefer mobile applications to USSD or agent-mediated channels. We argue that the presumption that the unbankable cannot use technology is anecdotal or obsolete, and barriers to financial inclusion are not limited to the uneducated and digitally illiterate, but common to a broader spectrum of society. Overall, digital literacy and the ability to use technology influences the tendency to use digital savings.

4.5.2 Tiered Relationships of Digital Savings Affordances

Another important finding is the dependent relationship among the affordances perceived by the unbankable using digital savings, where actualising one affordance is necessary for actualising another. This highlights the importance of understanding the interconnectedness of the various affordances identified in our analysis (Leidner et al., 2018). It is noteworthy that all affordances are not actualised simultaneously, but

rather at different stages or points in time (Strong et al., 2014), thus leading to our second proposition:

P2*: The affordances of digital savings have hierarchical relationships such that the actualisation of some elementary affordances is a precursor to the actualisation of higher-tier affordances (for example, the actualisation of the affordance of developing financial self-control is a precondition to actualising the affordance of achieving financial goals) and are unique to each usage behaviour.*

This finding differs from existing scholarly efforts in financial inclusion that present a flat and disconnected representation of affordances, showing they are equally important and actualised evenly. For example, prior research has identified various affordances perceived by individuals using mobile financial services (Hazra and Priyo, 2020); however, there was no clear hierarchy linking one affordance to the next. In contrast, our study found that different hierarchical relationships of some (not all) affordances of digital savings exist for the four usage behaviours identified among the unbankable. The lower or first-tier affordances are no less important or easier to achieve than higher-tier affordances, thus consistent with previous information systems research on affordances (Leidner et al., 2018). We go on to explain these hierarchical affordance relationships unique to each usage behaviour, the actualisation techniques, and the resulting outcomes that emerge.

I. Affordances of the Relationship-dependent Behaviour

Two primary affordances emerge from the interaction of the relationship-dependent digital savings users with the agent-mediated digital savings (see Figure 4.3). These are

the affordances of *accessing financial services (in geographic proximity)* and *building transparent financial relationships with the agents*. The former is actualised using various techniques, including using nearby agents, making digital savings their default financial services platform, and utilising different services that the platform offers (see Table 4.3). The affordance of transparent relationships with agents, underpinned by their pre-existing connections, can lead to improved trust. The extent of this relationship and trust is evident in the preferential treatment and incentives received by some users, and in the ability of some users to issue verbal financial instructions to the agents without the need to be physically present.

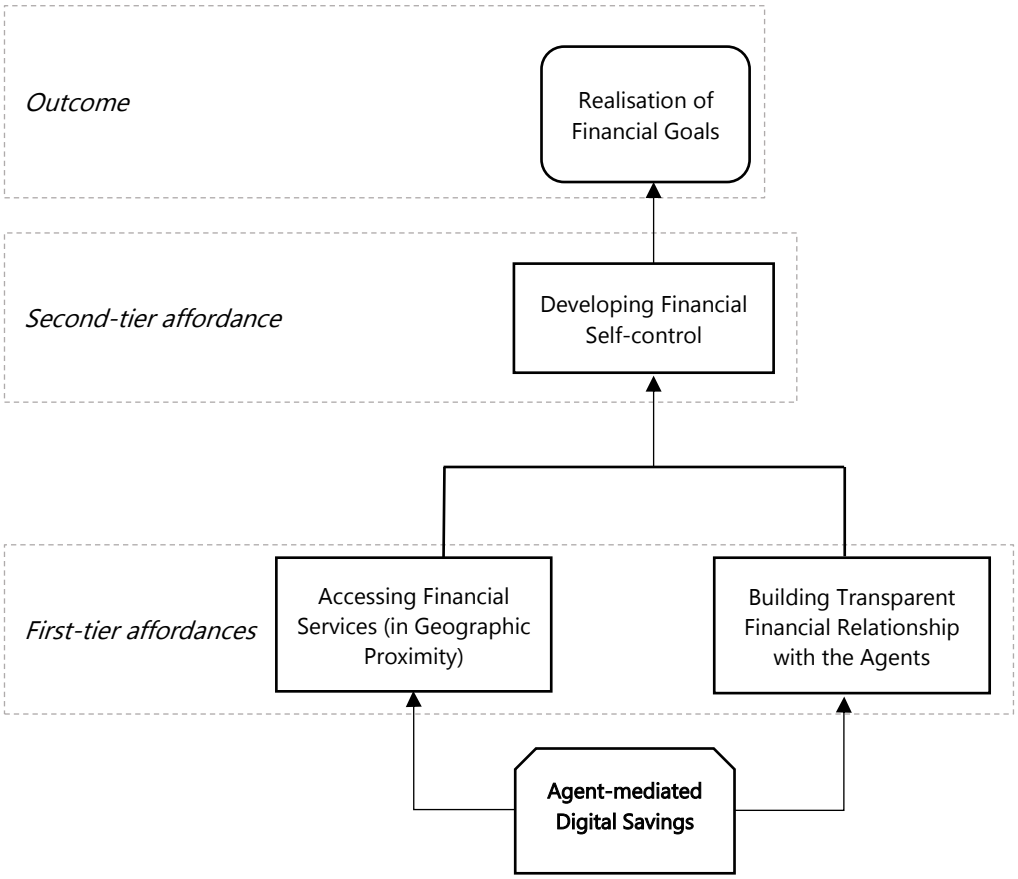

Figure 4.3: Hierarchy of affordances of the relationship-dependent behaviour

The actualisation of both first-tier affordances leads to a second-tier affordance of *developing financial self-control* (see Figure 4.3). Empirical studies have associated self-control with financial behaviour (Farrell et al., 2016; Rey-Ares et al., 2021). Self-control is the restraint over one's emotions, impulses, or desires (Rey-Ares et al., 2021). Restraining impulses and emotions associated with spending money is crucial for making sound financial decisions and managing finances (Farrell et al., 2016). Digital savings can help the unbankable achieve this by actualising self-control mechanisms including refusing to spend loose cash, committing to saving regularly through agents, and choosing to withdraw only when necessary (see Table 4.3). Studies have shown that individuals with higher levels of self-control are more likely to save (Lown et al., 2015). Therefore, by actualising the affordance of developing financial self-control, the unbankable can achieve the outcome of the realisation of financial goals (see Figure 4.3).

Affordance Class	Perceived Salient Affordance	Actualisation Techniques	Immediate Outcome	Digital Savings Behaviours			
				Relationship-dependent	Agency Method-driven	Market-driven	Tech forward
Financial	Accessing Financial Services	Making the platform their default financial services platform	Convenient access to financial services	√	√		
		Utilising different services that the platform offers		√		√	√
		Using proximate agents to access digital savings (last-mile reach)		√	√	√	√
		Accessing financial services remotely via mobile touchpoint					√

		Opening an account with limited documents	Inclusive access to formal financial services	√		√	√
		Accessing digital savings despite low education level				√	
	Developing Financial Self-control	Committing to regular savings regardless of the value of the transaction (facilitates micro-transactions/savings)	Development and maintenance of savings habit	√		√	√
		Deciding not to keep cash in hand for long to reduce the temptation to spend		√		√	√
		Choosing to withdraw only when necessary		√			√
		Leveraging the digital barrier between them and their money				√	
	Ensuring the Safety of Savings	Saving in their digital wallets instead of thrift collection or keeping cash at home	Security of funds		√	√	√
		Concealing their savings account from partner	Secrecy of personal account			√	
	Developing Safeguards to Absorb Shocks	Using digital savings to create a buffer for emergencies	Accumulation & easy withdrawal of emergency funds		√		
	Achieving financial goals	Using the platform as a tool for actualising their financial goals	On the right track to financial goals achievement	√		√	√
Relationship-based	**Building Transparent Financial Relationships with Agents**	Receiving favours and incentives from the agents	Improve trust level with agents	√		√	
		Issuing verbal transfer instructions to agents		√			
		Committing to continuous usage of the platform through the agents				√	
	Developing Transparent Relationships with Mobile App	Tracking financial transactions and behaviour through the mobile touchpoint	Improve trust in the app				√
	Staying in Vogue Among Peers	Using a mobile app for savings to stay in touch with digital trends	Becoming an influencer of their peers (source of influence to peers)				√
Transactional	**Enabling Commerce**	Using digital savings to receive proceeds from customer transactions	Ease of conducting commercial transactions			√	√

Table 4.3: Affordances, Actualisation Techniques, Behaviours and Outcomes

II. Affordances of the Agency Method-driven Behaviour

The agency method-driven usage behaviour perceives only one first-tier affordance, which is *accessing financial services (in geographic proximity)*, in order to realise their

end goals (see Figure 4.4). Unlike the relationship-dependent behaviour that relies on personal relationships with agents to build trust, this behaviour trusts the agency method by default, based on their prior experience with agent-based informal methods.

By actualising the first-tier affordance, two secondary affordances emerge. These are *ensuring the safety of savings* and *developing safeguards to absorb shocks* (see Figure 4.4). The safety and security of funds are of paramount importance to individuals using digital savings. A sense of security fosters a positive attitude and intention towards using financial services (Kumar et al., 2018; Singh and Srivastava, 2018; Himel et al., 2021). Users' sense of security is reinforced by knowing that digital savings agents have a physical kiosk, unlike informal agents who do not have a physical location. For agency method-driven behaviour, users realise the affordance of ensuring the safety of savings as they transition from saving at home or through informal methods to a more secure digital savings platform (see Table 4.3).

Additionally, by accessing financial services, the unbankable can develop safeguards to absorb shocks. Through daily savings, as they did with informal methods, individuals can build financial buffers to mitigate the economic impact of financial shocks should they arise (see Table 4.3), which is one of the major benefits of saving (Lewis and Messy, 2012). By actualising the two second-tier affordances, the unbankable can accumulate and easily withdraw those emergency funds, which can be put towards meeting their needs (see Figure 4.4).

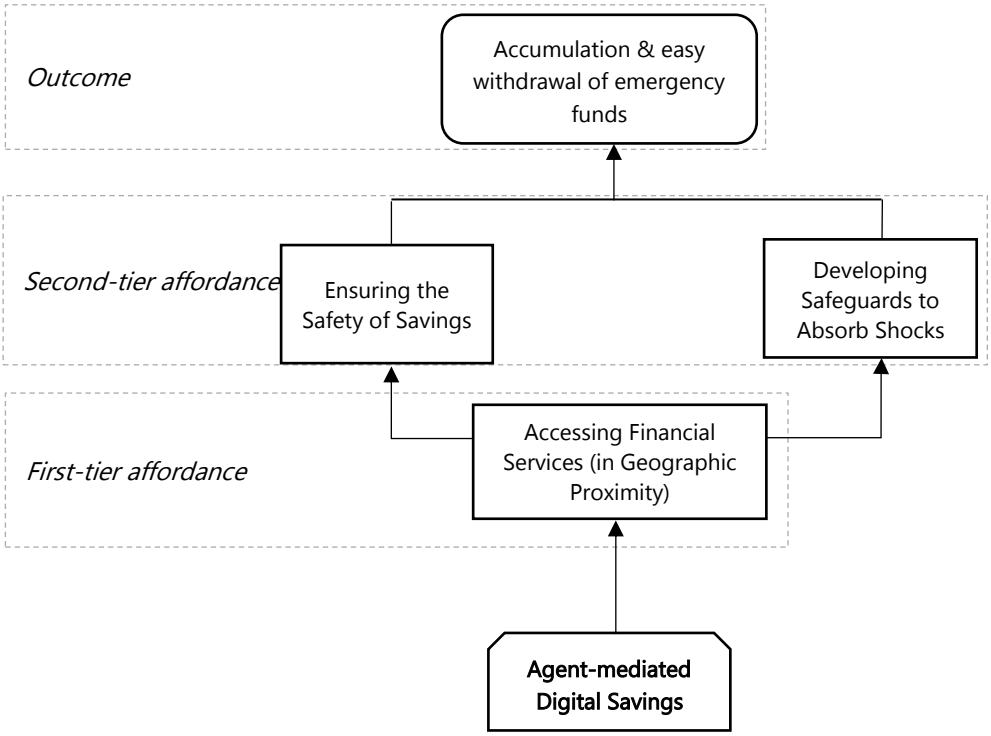

Figure 4.4: Hierarchy of affordances of the agency method-driven behaviour

III. Affordances of the Market-driven Behaviour

Comparable to the two previous behaviours, the market-driven behaviour is characterised by mainly using agent-mediated digital savings. Through this interaction, two first-tier affordances are perceived, namely *accessing financial services (in geographic proximity)* and *building transparent financial relationships with the agents* (see Figure 4.5). The former is actualised as individuals can access digital savings through the agents in their proximity regardless of their educational background or lack of identification documents. The latter is actualised over time as individuals engage in financial transactions with these agents, building trust and transparency in

their financial relationships, to the degree that they receive favours and incentives (see Table 4.3).

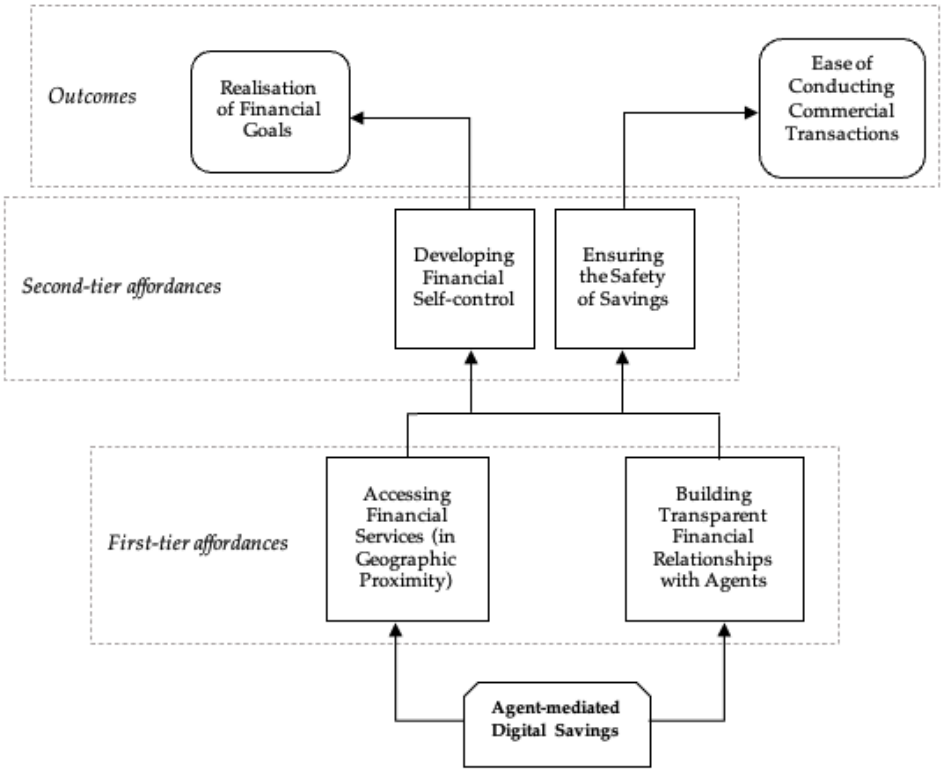

Figure 4.5: Hierarchy of affordances of the market-driven behaviour

The joint actualisation of both first-tier affordances leads to two second-tier affordances of *developing financial self-control* and *ensuring the safety of savings* (see Figure 4.5). Users actualise the affordance of developing financial self-control through a series of actualisation techniques, such as leveraging the digital barrier between them and their money and committing to saving regularly (see Table 4.3). This financial discipline developed through digital savings ensures they can build a savings habit that helps them to realise their financial goals (see Figure 4.5). Similarly, ensuring the

safety of savings enables them to realise their primary goal of conducting commercial transactions with ease. Without the assurance that the proceeds from their sales are secure, they might resist customer demands and the use of digital savings. This position aligns with the findings of Chopra (2019) who noted that concerns about the security of transactions oftentimes prevent street vendors from using digital wallets to receive customer payments. Likewise, research from Shin (2009), Tobbin (2012), Chawla and Joshi (2019), and Chawla and Joshi (2021) aligns with the influence of the security of funds on m-wallet adoption.

IV. Affordances of the Tech-forward Behaviour

Individuals with tech-forward behaviour, driven by their digital literacy and interest in technology, access digital savings through mobile channels. By bypassing the need to interact with digital savings agents, these individuals are able to realise two first-tier affordances, which are *accessing financial services (from anywhere)* and *developing transparent relationships with the mobile application* (see Figure 4.6). The actualisation of the former leads to *staying in vogue among peers* (see Figure 4.6), a second-tier affordance that shows their relevance as early adopters and influencers within their networks. This encourages them to recommend digital savings products to their circle of influence, showing that social influence can lower perceived risk (Koenig-Lewis et al., 2015) and increase the behavioural intention to use technology (Venkatesh et al., 2012) and mobile financial services (Slade et al., 2015).

Continuous use of mobile channels enables the unbankable to develop transparent relationships with the mobile application. This leads to the development of trust in the app as they are able to track their transactions and monitor their saving behaviour (see Table 4.3). By evaluating their performance, they can gain a better understanding of their financial habits and identify opportunities for improvement.

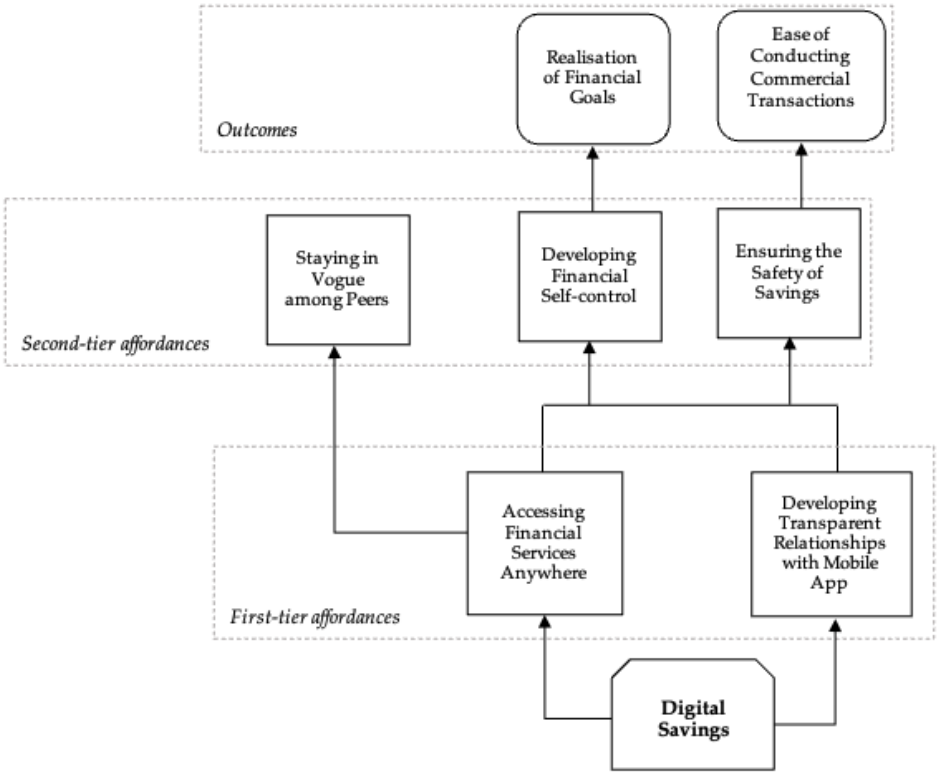

Figure 4.6: Hierarchy of affordances of the tech-forward behaviour

The actualisation of both first-tier affordances leads to two more second-tier affordances of *developing financial self-control* and *ensuring the safety of savings*. Through the use of mobile touchpoints, individuals can develop financial self-control by committing to regular savings, deciding not to keep cash in hand for long to reduce the temptation to spend, and only withdrawing funds when necessary (see Table 4.3). This helps them to realise their financial goals (see Figure 4.6). Similar to market-driven

behaviour, ensuring the safety of savings guarantees the ease of conducting commercial transactions (see Figure 4.6).

4.6 Implications

Our study extends the work on financial inclusion in a bid to understand how the unbankable interact with digital savings and its potential to serve them. It emphasises the usefulness and practicality of digital savings as an emerging valuable tool for improving financial well-being. By identifying the usage behaviours and affordances, we highlight the unique ways in which technology shapes savings behaviours, as well as offer new insights that can be used to develop targeted solutions for increasing financial inclusion among the unbankable. The study also highlights the need for further research in the area of usage behaviour, which has been under-explored in the literature.

Technology affordance research accentuates the linkage between action possibilities and technology capabilities (Faraj and Azad, 2012), besides the connection between affordances and immediate outcomes (Leidner et al., 2018). Not only does our study reinforce the position of existing technology affordance research that suggests affordances can generate different outcomes for different actors when they interact with the same technology (Bygstad et al., 2016) and validates the stance that a user-technology interaction can reveal multiple affordances (Volkoff and Strong, 2013), it further extends the affordance theory by showing how digital savings afford financial

inclusion across a diverse spectrum of the unbankable who are guided by different motivations.

Practically, this study further emphasises the centrality of financial services agents to provide last-mile financial services to the unbankable. Our findings align with previous studies that have shown the positive effect of *agency banking* on financial inclusion and financial behaviour, including saving practices (Mwando, 2013; Buri et al., 2018; Cull et al., 2018). The agency network, thus, holds a promise to drive financial inclusion through digital savings.

In the context of technology design and development, designers and providers often define technologies by the bundles of features and functionalities they embody (Faraj and Azad, 2012). Many researchers have also accepted this *technology-as-designed* reference point (Faraj and Azad, 2012). Rather than focusing solely on technology features and functionalities or its adoption and diffusion, it is of equal importance to understand how users interpret and use technology to meet their needs. The hierarchical models presented in this study represent the sequential relationships between the perceived affordances of a technology and its actualised usage behaviours among the unbankable. This shift in perspective encourages stakeholders to adopt a more holistic, user-centric approach to financial inclusion delivery, rather than a limited and subjective focus on technology features alone.

4.7 Conclusion

This study examined the impact of digital savings on the unbankable, providing suggestive evidence that users have multiple preferences for using digital savings. By applying the affordance theory, this research provides insights into the action potentials that digital savings offer the unbankable to meet their immediate savings needs. Consistent with the theory, the users perceive digital savings as affordances (action potentials) rather than their properties. The study found different usage behaviours among digital savings users, driven by different motivations and needs, suggesting that offerings should be tailored to meet the needs of each group, for optimal digital savings delivery. Future research should consider using a larger sample size, trialling interventions, and studying digital savings behaviours over time to gain further understanding.

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Appendix: Interview Questions

Personal Characteristics

- What is your gender?
- How old are you?
- Where do you reside?
- What is your highest level of education?
- What is your marital status?
- Do you work? What type of job do you do?
- What languages can you read, write, or speak comfortably?
- What type of phone do you use?
- How well do you use technology – the computer, mobile devices, and social media?

Managing finances

- How do you make day-to-day decisions about your money?
- How do you meet your financial goals?
- Have you received any financial training?
- What financial services do you use?

Digital Financial Services

- How often do you buy or pay for items?
- What are your major expenses?
- What payment methods do you use for food, utilities, airtime, etc?
- How do you send and receive money?
- Are you aware of any financial services?
- Do you use any digital financial services? If yes, which one(s)?
- What do you use digital financial services for?
- Why do you use this digital financial service in comparison with banks?
- How does the platform work?
- Do you have an account number or a wallet on this platform?
- How do you access this financial service?
- If you use agents, why don't you access it on your phone?
- Is the agent male or female? Which do you prefer – or does it (not) matter? Why?
- Do you receive transaction alerts on your phone? If not, why not?
- How do you keep track of your transactions and account balances?
- How much do they charge you for payment transactions?
- How did you hear about it?

- How long have you been using it and how often do you use it??
- How did you register for it? What documents did you submit?
- Since you have been using it, what impact has it made on your finances?

Digital Savings behaviour

- Does this platform allow you to save?
- Do you save on it? If not, provide reasons
- How often do you save on it?
- What portion of your earnings do you save?
- Does the platform have a balance or transaction limit? What is the limit?
- Do you earn any interest on your savings?
- Why did you choose this method for saving (in comparison to other methods)?
- Does it meet your needs?
- How do you save on it? Do you use agents?
- How much do they charge you for savings transactions?
- What do you intend to achieve by saving on it?
- How long have you been using it to save?
- How long do you save before withdrawal?
- How often do you withdraw?
- Are there other benefits associated with using it? Mention them.
- Do you have any concerns about it?
- How would you save if this savings method did not exist?
- How would you compare informal methods with this digital savings method?

5. Research Conclusion

This thesis explores financial inclusion literature from developing countries and digital savings policies and behaviours, using data from sub-Saharan Africa. Through three original articles in Chapters 2 – 4, the study addresses four main research questions. This conclusion chapter (1) summarises the research findings, (2) highlights key contributions to the field, both theoretically and practically, and (3) discusses any limitations and potential areas for future research.

5.1 Research Summary

Two motivations underline this research. The first is the need to address the issue of low financial inclusion in developing countries, particularly in sub-Saharan Africa. The second is the recognition that digital savings have the potential to drive financial inclusion among the unbankable, yet uptake remains low and research in this area is limited. Besides, digital savings remains a developing research area that requires more scrutiny to optimise financial service delivery. The research thus focuses on how to drive financial inclusion in developing countries through digital savings.

From the outset, the researcher recognised the importance of understanding the financial inclusion landscape in developing countries, including the research areas that have been captured in the literature and themes that require further study. Given the lack of clarity in the current understanding of financial inclusion in these countries, a preliminary literature review revealed that previous studies often relied solely on traditional banks as a metric for evaluating financial inclusion (Osei-Assibey, 2009).

However, the emergence of digital channels has expanded the scope of financial services beyond traditional banking, and it is important to consider this in financial inclusion research to gain a comprehensive understanding of the concept. Additionally, existing definitions and understanding of financial inclusion are inconsistent, and distilling existing works can provide a deeper understanding of the phenomenon. This prompted the first research question, which is made up of two parts:

Research Question 1: *(a) What are the current research areas and themes in cross-disciplinary financial inclusion studies pertaining to the unbankable in developing countries? (b) What are the current gaps in knowledge about financial inclusion in developing countries as identified in the literature?*

To examine this problem, a comprehensive literature review was conducted. The first article in the study, Article I, titled *Financial Inclusion in Developing Countries: A Review of Recent Themes in the Literature,* provides an in-depth examination of existing financial inclusion literature in order to understand the research problem and opportunities for advancing financial inclusion in developing countries. This literature review is crucial for monitoring the progress of financial inclusion and informing data-driven policy actions, in addition to understanding the current research landscape in this field.

The study applied a systematic literature review (SLR) technique, scanning 308 research articles from journals ranked ABS 2 to 4*. The paper revealed a need for more research

in the information systems domain related to financial inclusion in developing countries (see Table 5.1). Additionally, the review identified recent trends in financial inclusion research, such as the impact of Covid-19, FinTech, and digital finance. The study also highlighted the limited use of theoretical frameworks in financial inclusion research in developing countries but noted that recent works have started to address this gap. Overall, the review identified eight main themes in the literature: (1) *the state of financial inclusion*, (2) *the determinants and barriers to financial inclusion*, (3) *how financial services afford financial inclusion*, (4) *the categories of financial services,* (5) *the adoption of financial services,* (6) *business model and strategy of providers*, (7) *user behaviour toward financial services*, and (8) *the impacts of financial inclusion in developing countries*.

	Research Questions	Findings
Article I	• What are the current research areas and themes in cross-disciplinary financial inclusion studies pertaining to the unbankable in developing countries? • What are the current gaps in knowledge about financial inclusion in developing countries as identified in the literature?	• Limited financial inclusion research from the information systems domain • Limited theoretical application in financial inclusion research • Eight main themes identified • Determinants & impacts of financial inclusion are commonly discussed themes • Digital Savings topics are overlooked in financial inclusion studies on developing countries • Behavioural and policy perspectives are overlooked

Article II	• To what extent does Africa prioritise digital savings in its financial inclusion effort and policies? • What are the prevailing digital savings policy approaches in Africa?	• Digital savings is not prioritised in financial services policies representing a major barrier to financial inclusion • Policy structure differs across African regions • Identified the typology of digital savings from policies, consisting of three variants – *traditional finance-centric, electronic money-centric, and electronic money with digital savings features*
Article III	• How do the unbankable in developing countries utilise and perceive digital savings as an opportunity for financial inclusion?	• Three classes of affordances for digital savings users among the unbankable: *relationship-based, transactional, and financial* • Four digital savings usage behaviours: *relationship-dependent*, *agency method-driven*, *market-driven*, and *tech-forward* • Established a hierarchy of affordances that shows their unique interdependencies per behaviour

Table 5.1: Summary of Research Questions and Findings

Furthermore, this paper highlights that digital savings is an under-explored research area in financial inclusion literature in developing countries (see Table 5.1). Further research is needed to fully understand its potential in driving financial inclusion and improving savings behaviour, which can lead to additional economic benefits. Noticeably, a growing body of research leveraged the Global Findex database provided by the World Bank to measure and understand the level of financial inclusion across the world, particularly within developing countries (Demirgüç-Kunt and Klapper, 2012b; Allen et al., 2016; Soumaré et al., 2016; Zins and Weill, 2016; Asuming et al.,

2019), and found that efforts and strategies in many parts of Africa have not been effective in promoting deeper forms of financial inclusion, particularly through savings (Demirgüç-Kunt et al., 2017). Africa has the lowest saving rate worldwide (Demirgüç-Kunt et al., 2017), and it is believed that technology-driven savings methods, also known as digital savings, can address barriers to savings and assist the unbankable kickstart their way to financial well-being. However, existing solutions are limited and have not gained significant adoption, despite the success of other financial innovations such as mobile money (World Bank, 2019). Further research on digital savings could help to unlock its potential for financial inclusion among the unbankable in developing countries.

Considering these gaps necessitates the overarching line of inquiry to examine digital savings as a tool for financial inclusion among the unbankable. Through this research, the researcher aims to understand the barriers and enablers of digital savings adoption and usage, and provide insights into how digital savings can be leveraged to further drive financial inclusion. Specifically, this led to the development of a clear research objective for the rest of the study:

Research Objective: *To explore the potential of digital savings to drive financial inclusion from both policy and behavioural perspectives.*

Article I further suggests the need for a greater focus on policy and behavioural lenses in financial inclusion research (see Table 5.1). This indicates that a lack of understanding in these areas may be one reason for the limited uptake of digital savings compared

to other digital financial services such as payments and credit. While there is a perceived lack of demand for digital savings, the supply is also limited. One key factor that can impact the supply of digital savings is policy. With this research objective and gaps in mind, the second and third research questions were developed, providing the foundation for the next article in the study, Article II:

Research Question 2: *To what extent does Africa prioritise digital savings in its financial inclusion effort and policies?*

Research Question 3: *What are the prevailing digital savings policy approaches in Africa?*

Article II aimed to provide a holistic view of financial inclusion policies in Africa and evaluate the extent to which policymakers and governments include digital savings in their financial inclusion agenda. To achieve this, the study reviewed the substantive digital finance policies across all African countries. These policies were sourced from government agencies and international organisations' online policy repositories.

Article II revealed a significant mismatch between the promise of financial inclusion by policymakers and digital savings policy considerations. The article found that there is a lack of prioritisation of digital savings in the policies of many African countries (see Table 5.1). This signals potential obstacles to realising the full potential of digital savings to drive financial inclusion among the unbankable. The article also identified a typology of digital savings from the financial services policies on the continent, consisting of three variants – *traditional finance-centric*, *electronic money-centric*, and

electronic money with digital savings features. Regardless of the current policy directions, Article II identifies the potentiality of *electronic money with digital savings features* variant to stimulate digital savings take-up among the unbankable.

With the understanding that current policies inhibit the supply of digital savings, there is a limited understanding of how those who are able to access digital savings interact with the existing solutions. In order to fill this gap in research, the final article aimed to investigate the usage behaviours and motivations of the unbankable towards digital savings. This examination also stems from Article I, highlighting the need for more behaviour-based studies in financial inclusion research. Scholars have argued that savings behaviour is guided by the willingness and ability to save (Barr and Sherraden, 2005; Pandey and Swasdpeera, 2012), which is rooted in traditional theories of saving (Katona, 1975). However, these studies have largely neglected to explore savings behaviour in developing countries, particularly the impact of digital savings. Therefore, this led to the development of the final research question which aims to examine the research gaps in digital savings literature and investigate the usage behaviours of the unbankable:

Research Question 4: *How do the unbankable in developing countries utilise and perceive digital savings as an opportunity for financial inclusion?*

Article III examined the research question through the lens of the affordance theory. This theory has been used by other information systems researchers to understand user behaviour towards an IT artefact. Elements of the grounded theory approach were

used in the analysis to gain a rich description of data from digital savings users among the unbankable in sub-Saharan Africa, which involved conducting semi-structured interviews with 45 digital savings users of various age groups, education levels, and social backgrounds in Nigeria.

The study revealed three classes of affordances that digital savings provide the unbankable: financial, relationship-based, and transactional affordances (see Table 5.1). Four usage behaviours also emerged among the unbankable who use digital savings. Two propositions were suggested. The first proposition identifies the potential motivations that drive the use of digital savings among the unbankable. The second proposition extends the affordance theory by suggesting a tier affordance structure in digital savings usage behaviour, where the actualisation of one affordance leads to another.

5.2 Theoretical and Practical Contributions

This section summarises the theoretical and practical contributions of this research. Several research contributions were identified and summarised below. Table 5.2 shows a full list of contributions from the three articles.

Article I: *Financial Inclusion in Developing Countries: A Review of Recent Themes in the Literature*

Firstly, this research advances knowledge on the breadth of financial inclusion literature in developing countries by identifying its existing and overlooked themes. The understudied research areas provide opportunities for further research.

Secondly, by using a systematic literature review approach, the comprehensive literature review refreshes existing efforts to provide up-to-date knowledge on financial inclusion, given the rapid development and technological influence of the field.

Thirdly, the study reveals the lack of information systems scholarship and theoretical applications that can weaken the body of work relying on descriptive techniques, thereby limiting the understanding of the domain.

Practically, the research insights into the financial services landscape can provide critical understanding to support policymakers and providers for better financial inclusion positioning.

Article II: *Digital Savings for the Unbankable: Discrepancy of the Promise of Financial Inclusion and Digital Savings Policies in Africa*

Drilling down to specific areas in financial inclusion research, this study represents one of the earliest scholarly efforts in the digital savings domain – a nascent research area. While financial inclusion research is centred on banks, digital payments, mobile money, and credit, this study identifies digital savings as a pathway to bridge financial inclusion gaps among the unbankable in developing countries. This work, thus, redirects interests from conventional methods to a new path to providing financial services.

The focus on digital savings policy reveals a systemic problem that theoretical and empirical studies have previously overlooked. By identifying the typology of digital savings from policies in Africa, this study creates a data-driven blueprint for further

research. Policy is central to advancing financial inclusion in Africa as it influences the demand and supply dimensions. Yet, policies in developing countries are often sporadic and adopt a trial-and-error approach. As a result, the policy landscape becomes a framework that stirs more conversations and inquiries into deep-rooted financial inclusion barriers that were only visible to a few.

The research prescribes a shift in mindset and policy directions that could advance digital savings throughout the continent towards realising the promise of financial inclusion.

Article III: *Exploring the Affordances of Digital Savings among the Unbankable in Sub-Saharan Africa*

Through the application of elements of qualitative grounded theory, this study contributes to the sparse body of work on user behaviour in financial inclusion. Following calls for behavioural studies on digital financial services (Dahlberg et al., 2015; Raji, 2017; Nan and Markus, 2019), the study identifies four usage behaviours that influence how the unbankable utilise digital savings. This behavioural approach further establishes the theoretical principles that predicate saving decisions, especially in the face of technological advancements that continually shape user preferences. Using digital savings as the research area represents a fundamental shift from traditional saving practices that do not ascribe technological influence on saving behaviours.

The study extends the affordance theory by conceptualising the potential for actions that digital savings offer the unbankable in their attempt to achieve daily goals. It presents hierarchical models that can explain how IT artefacts affect user behaviour. Rather than extending our analysis to adoption theories that often explain intentions, our contribution is a new network of affordances that uncovers how the underserved population reacts to, uses, and appropriates financial innovations.

Finally, this study makes a practical case for the unbankable to shift from habitual risky informal practices to more secure and regulated digital savings that offer more potential, even beyond the providers' intended design and use case. For providers, the emergence of the four user behaviours indicates a one-size-fits-all strategy, and products may not apply to the unbankable. Much as previous studies recognise the unbankable as one type of people with similar attributes, the study identifies that digital savings users are motivated differently, and advocates for solutions to be tailored according to those motivations to drive up usage. For policymakers, there is a need to recognise digital savings as the foundational financial inclusion instrument. While payments and credit come with inherent risks of leading the unbankable into a debt trap (Torkelson, 2020; Yue et al., 2021), digital savings can spur such individuals and households to inclusive growth, poverty reduction, and economic development.

Contributions	
Article I	• Advances knowledge on the breadth of financial inclusion literature in developing countries by identifying its existing and overlooked themes and providing up-to-date knowledge on financial inclusion

	• Reveals a lack of IS scholarship and theoretical applications that can weaken the body of work relying on descriptive techniques and limit the understanding of the domain. • Provides critical understanding to support policymakers and providers for better financial inclusion provisioning. • Contributes to the discussion on a shift to digital solutions by demonstrating their potential to address longstanding barriers
Article II	• Pioneers studies that examine the policy perspective within the digital savings domain, thereby identifying previously unrecognised systemic issues in financial inclusion research in Africa. • Provides a holistic view and an evidence base of the policy landscape in Africa as it relates to digital savings. • Unveils the typology of digital savings in Africa that can serve as a template for future research on financial inclusion in developing countries. • Contributes to addressing policy-related barriers to financial inclusion.
Article III	• Pioneering effort in research on digital savings usage among the unbankable and identifying the associated socio-technical affordances. • Further extends the affordance theory that predicates saving decisions in the face of technologies shaping user preferences. • Establishes a fundamental shift from traditional savings research that does not ascribe technological influence on saving behaviours. • Addresses gaps in our understanding by revealing digital savings behaviours among the unbankable, indicating new knowledge that provides opportunities for future research. • Contributes to financial inclusion literature by providing new insights from the sub-Saharan African context where research on savings-related user behaviour is rarely examined.

	• Establishes the usability & utility of digital savings as a critical financial inclusion tool by demonstrating the plethora of opportunities it offers beyond the intentions of providers. • Assists researchers, product owners, providers, and policymakers in understanding how to optimise digital savings under the financial inclusion agenda by providing a people-centred approach to innovation design.

Table 5.2: Summary of Research Contributions

5.3 Limitations and Future Work

This section highlights the limitations of this research and identifies areas for future study.

One limitation of this research is its sole focus on the unbankable in developing countries. While this population is particularly vulnerable to financial exclusion, which necessitates an intense focus, it would be valuable to conduct further research on other segments of the population, such as the banked or individuals higher up in the economic pyramid, to see how the experiences and needs of these groups differ from those of the unbankable.

Secondly, this research only examined digital savings solutions, which are primarily offered by FinTech firms. Traditional savings methods or investment schemes were not included in the scope of this study. This decision was made due to the failure of traditional savings methods to address the needs of the unbankable and the saturation of research in this field. Besides, the sophistication of investment schemes makes them

inapplicable to the unbankable. Future research could explore how these investment schemes could be adapted with digital savings to serve the unbankable.

Thirdly, the empirical study on digital savings behaviour collected data through interviews in Nigeria. Although Nigeria is the most populous African country and represents a typical developing country with economic and infrastructural challenges, the applicability of the findings to other developing countries, particularly outside of Africa, should be carefully considered, due to the differences in culture and social norms, among other factors. To address this limitation, future research could replicate the study in other environments to test its generalisability. Moreover, a longitudinal study could provide additional insights into evolving behavioural patterns. Additionally, focusing on specific groups such as women and rural populations could also add value to the research.

Fourthly, while affordance theory was applied in this study to understand digital savings behaviour, it did not consider the sequential relationships between product features and eventual usage, as adopted in studies such as Anderson and Robey (2017). This conceptual arrangement can be applied to future studies to explore behaviours in the context of digital savings.

Fifthly, much as the policy study in this research primarily relied on secondary data for analysis, with online policy repositories being the major data sources, utilising primary data sources such as interviews with key stakeholders, such as policymakers, in future research could provide deeper insights and opportunities for triangulation.

Additionally, further examination of the implementation and adoption challenges faced by financial institutions and governments in promoting digital savings could also be a valuable area of research.

Finally, this study employed a qualitative research approach using an interpretive position to gain insights into the social world of the respondents. Future studies could consider other epistemological positions, such as positivism or critical realism, to provide additional perspectives. Additionally, future research could benefit from a mixed-method approach, combining both qualitative and quantitative data, to provide a more balanced and robust examination of the research topic, allowing for the results of one data type to validate or support the findings of the other.

5.4 Final Thoughts

Overall, this study highlights the importance of understanding how digital savings can be leveraged to drive financial inclusion among the unbankable in developing countries. Financial inclusion is a crucial topic of interest, particularly in countries with infrastructural challenges. As technologies continue to advance, there is potential for the use of tech-driven financial innovations to address financial inclusion gaps. Digital savings, as a combination of technology and savings, can be a powerful tool for promoting financial inclusion and improving economic well-being for the unbankable. This thesis brings to light this emerging research area and contributes to the body of knowledge on digital savings and financial inclusion.

Master Reference List

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