Assessing The Status Quo Of Fintech In Africa. The Role Of African Fintech & Financial Inclusion Promotion: A Systematic Literature Review

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ABSTRACT

Even though Fintech is also transforming financial inclusion in Africa, its influence is not well studied. This systematic literature review studied the status quo of Fintech in Africa. Our study focused on the following factors: adoption affectors, opportunities Fintech provides, and the challenges documented to have been faced so far, based on academic literature. The study found that Fintech is playing a major role in the improvement of financial inclusion in the region, as it has created opportunities for the unbanked population. It has also provided easy access to remittances and reduced money crimes by providing secure ways of transferring money through mobile phones. The study, however, revealed that Africa still faces various challenges, such as poor financial infrastructures, financial illiteracy, lack of awareness, and poor internet connections in rural areas, among others. The study contributes to the existing body of knowledge on financial inclusion. It also offers insights on best practices to guide fintech players regarding areas to focus on to increase financial inclusion. It also guides scholars seeking other appropriate research fintech areas in Africa.

Keywords: Fintech, Financial Inclusion, Africa, Mobile Money, e-payments, Digital Money, Financial Capability, Digitalization, Digital Transformation, Digital society, Equality, Inclusiveness.

I. INTRODUCTION

The fourth industrial revolution has seen various digital innovations, transforming even the most traditional sectors (Ghoreishi et al., 2020) to modern digitally enhanced products and services, which e.g. has enhanced the availability, accessibility, and scope of resources in service delivery. These innovations have also created technology-enabled value co-creation processes (Agrawaal, 2022). In the same ways as the industrial sectors are seeking new approaches to the next level of efficiency and sustainability (Happonen & Ghoreishi, 2022), similarly, the financial sector is seeking ways to shed its skin and enjoy new capabilities in the 2020s digital platforms, solutions, and data & service accessibility of private consumers allows them to reach. Information Technology has also impacted the financial service sector significantly (Adrian & Mancini-Griffoli, 2019). Banks are continuously digitalizing their processes, improving them, and streamlining the user experience, which enables customers to complete online transactions in a more modern and wider scope than ever before. The transition e.g. enabled customers to access their banking services without having to go to physical banks, resulting in low operating costs for banks and reduced costs for customers, considering that they do not have to travel anymore. This clearly improves the equality of reaching the services. Similarly, innovative mobile phone technologies and developing location-knowledgeable software with well-behaving position data have been widely spread globally and have greatly improved the delivery of services in different sectors, including the financial sector (Jahkola et al., 2017).

Implementing digital innovations in the financial sector is called Fintech (Agrawaal, 2022). 'FinTech' as a term is a blend of 'finance' and 'technology', broadly defined as technology-enabled financial services, processes, applications, and products. Fintech has transformed the traditional approach on the banking context and disrupted the global financial system by providing digital financial services such as mobile payments, electronic wallets, blockchain-based solutions, and cryptocurrencies (Fersi et al., 2023). Fintech is considered one of the cornerstones of financial inclusion, as it addresses various challenges faced by the unbanked population, such as lack of access to formal financial services, crime resulting from cash handling, and other related challenges. The diffusion of technology in financial services offers customers a cashless, secure, cheaper, and efficient way of transforming and storing

money. There has been a rapid increase in the adoption of Fintech worldwide, which has improved financial inclusion. Emerging markets are not excluded from this development. Africa has seen rapid growth in Fintech over the past two decades (Arslan et al., 2022). According to the World Bank (2012), there are over 208% annual mobile phone subscriptions in Sub-Sahara Africa, indicating that most of the population has access to mobile phones. In 2022, Africa had over 415 million smartphone subscriptions (Ashenafi & Yan, 2023). Research has shown that Africa dominates the adoption of mobile money payments, and half of the mobile money payment services are from Sub-Saharan Africa, which has boosted financial inclusion in the region (Ashenafi & Yan, 2023). Smartphones and the Internet have enabled previously unbanked people to have access to financial services, exactly like the Internet is enabling industry to move previously unconnected devices into World Wide Web, to the industry 4.0 era (Ghoreishi et al., 2020).

According to Adetunji & David-West (2019), unbanked people refer to the population that does not have access to banking services for reasons such as not having collateral or other requirements required to open a bank account. These unbanked population are mostly low-income earners and/or those in informal employment (Adetunji & David-West, 2019). Over a million people in developing countries are unbanked, and as a result, they are prone to crime because they resort to informal financial services, which are sometimes unsafe. Therefore, Fintech plays a major role in bringing a cashless economy to the people (McKenzie & Slind, 2019). As Triodos Investment Management (Triodos Investment Management, 2019) puts it, fintech players aim to reach a broader range of customers more efficiently, cheaper, and customer-friendly. Fintech is also one of the ”shining star examples”, connected to frugal innovations, showing how digitalization and limited resources requirements can push new innovative solutions into the demand markets.

Even though Fintech plays a significant role in financial inclusion in Africa, it is crucial to the challenges and opportunities it brings. It is against this background that this study sets out to explore the role of Fintech in promoting financial inclusion in Africa. This is essential, as it will contribute to the existing body of knowledge on financial inclusion.

Based on the goal of the research, the following research questions were formulated:

1. What role does Fintech play in financial inclusion in Africa?
2. What is the current view on academic research on factors affecting the adoption of Fintech in Africa?

To answer the first question, the study looked at the literature on how Fintech is utilized in African countries and how it contributes to financial inclusion. For the second question, we looked at studies that explored factors influencing the use of Fintech in Africa.

II. FINTECH BACKGROUND

Since Fintech is a fairly new industry, several researchers have attempted to segment it (Bank for International Settlement, 2017; Dorfleitner et al., 2017; IMF, 2021). For example, Dorfleitner et al. (2017) divided the Fintech industry into the following four segments: Financing, Asset management, and Payment transactions, as well as other fintech companies that perform other related functions. Similarly, the Bank for International Settlement (2017) categorized the industry into three sectors: Credit deposit and capital raising services, payment, clearing and settlement services, and Investment Management services.

Lastly, IMF (2021) has categorized it into three categories: mobile money, internet-based fintech payments, and digital money.

The study uses the three streams suggested by the IMF (2021). Jack & Suri, (2011) define mobile money as an individual account, whereby a user can deposit, transfer, and withdraw money even though they do not have a bank account. Mobile money has become very common, especially in developing countries, and it successfully serves the unbanked population (Marco Espinosa-Vega et al., 2020). Internet-based (electronic) payments refer to online payments, such as Amazon e-commerce payment services.

Fintech companies have also developed mobile payment applications that allow online payments. Traditional commercial banks have also joined independent fintech companies in developing mobile applications that allow users to perform traditional banking services on their mobile phones. This is commonly known as mobile banking. Digital money refers to monetary value that exists solely in electronic form.

There are different types of digital money, such as cryptocurrency, Central Bank Digital Currency (CBDC) that are usually pegged to national currencies, stablecoins etc (IMF, 2021). In the era of the global pandemic (covid-19), a lot of e-commerce services have seen a huge rise in business activities (Fakieh & Happonen, 2022), which pushed all public (Happonen et al., 2021) and industrial sectors alike to renew their digitally enhanced and optimized / automated (Ylä-Kujala et al., 2023) operations.

III.FINANCIAL INCLUSION

Conventionally, financial services have been ruled by conventional banks and branches. Currently, fintech companies have received increased importance due to their role in resolving the issue of financial inclusion, particularly in developing nations. Financial inclusion involves the delivery of financial services at an affordable cost to all segments of society. It refers to individuals and businesses having access to financial services that meet their needs, such as transactions, payments, savings, insurance, etc. (Feyen et al., 2019). According to Feyen et al. (2019), such services must be provided responsibly and safely to the consumer and sustainably to the provider in a well-regulated environment. At its most basic level, financial inclusion starts with having a deposit or transaction account at a bank or other financial institution or through a mobile money service provider, which can be used to make and receive payments and to store or save money.

Financial inclusion has received increasing attention from researchers and policymakers in the past two decades as a potential source of economic benefits (Marco Espinosa-Vega et al., 2020). As Levine (2005) puts it, finance has a positive impact on the economy through the critical functions it undertakes: (i) to produce information; (ii) allocate capital to productive uses; (iii) monitor investments and exert corporate control; (iv) mobilize and pool savings; (v) facilitate trading, diversification, and management of risk; and (vi) ease the exchange of goods and services. Banks, other financial institutions, and financial markets can carry out these functions, such as those for bonds or equity.

A key component of the increase in financial inclusion has resulted from a fintech innovation, the adoption of mobile money accounts, mostly in Sub-Saharan Africa and, to a lesser degree, in South Asia. In Sub-Saharan Africa, over one-fifth of

the adult population uses mobile money accounts, compared to 4 percent worldwide (IMF, 2021). At the same time, one might expect a strong negative correlation between the proliferation of mobile money and the use of conventional bank accounts, as the former substitutes for the latter.

Feyen et al. (2019) postulate that countries can differ quite dramatically in their levels of financial inclusion and that such differences are due in part to structural differences that may facilitate or hinder financial inclusion. Data on financial inclusion reveals various gaps: for example, between rich and developing countries, between partial and universal inclusion (particularly in the case of account holding), and between the observed levels and the structural benchmarks for a given country at a specific time (IMF, 2021).

For example, according to the Alliance for Financial Inclusion (AFI) (2018), in 2015, approximately two billion people (roughly 38 percent of the world's adult population then) did not have a formal bank account. The majority of the unbanked live in developing economies and emerging markets and cannot procure or deliver the necessary paperwork to open an account, or if they can afford an account, they cannot afford the time off work and travel costs to attend a branch (AFI, 2018). Therefore, financial inclusion is vital in improving the livelihoods of the poor and disadvantaged. Providing developing countries people with access to financial services, such as payments, savings, insurance, and credit, will help them to manage their financial obligations. Good financial obligation management practices can build a better future for their families while supporting broad economic growth, development, and poverty reduction.

This is achieved, first, by making individuals less vulnerable by enabling them to save to increase their resilience and invest in their education, health, and micro businesses (Urueña-Mejía et al., 2023). Secondly, financial inclusion can make daily life management far more efficient; for example, electronic payments allow people to pay for essential services without taking time off work to pay the bills in person. Third, financial inclusion enables the shifting of financial risks from individuals to the financial system, where these risks can be socialized and diversified. For instance, insurance against severe illness of the family breadwinner(s) can prevent people from falling back into poverty. Fourth, financial inclusion supports economic growth by expanding access to financial resources supporting

real economic activity, particularly for individuals and small, small, and medium-sized businesses (SMEs). It also supports broader economic growth by underpinning a local currency-based financial system in which local savings fund local investments. This is a particular, longer-term benefit as the less a financial system depends on foreign debt, the less it is exposed to external shock (Tok & Heng, 2022; Urueña-Mejía et al., 2023). In a bigger picture, the Fintech area should take a look at who is developing these services in general. The user base is quite 50-50 well balanced in, or at least constantly going in that direction, in a gender sence. It means it would be great to make sure the developers, concept designers and decision makers on what, when, and where it is released on markets would also be diverse in gender, cultural, and educational background sense. In fact, generally speaking, barriers to pursuing stem careers need to be reduced (Tereshchenko et al., 2023), more females are needed in ICT and software development programmes (Kovaleva et al., 2022) and sectors in the industry, and with micro-companies funding support through Fintech, also to entrepreneur careers too (Kovaleva et al., 2023)

III. METHODOLOGY

For this study, we have carried out a systematic literature review, whereby we have analyzed academic literature on Fintech, focusing on Africa, guided by the three segments of Fintech as suggested by IMF (2021). Systematic literature review refers to a transparent search over various academic databases for peer-reviewed literature in digital metainformation and index databases, seeking to answer the defined research questions by Munn et al. (2018). The systematic literature review followed the following steps suggested by Xiao & Watson (2019):

1. Literature search and evaluation
2. Inclusion criterion
3. Literature identification
4. Screening for inclusion

LITERATURE SEARCH AND EVALUATION

It is crucial to identify digital databases that are popular in the subject of interest and to include a sufficient number of them in the literature search (Xiao & Watson, 2019). For this study, we have identified Emerald, EBSCO, and Taylor & Francis online databases to offer the best coverage and a wide range of

research-supporting studies. We have included studies that a) focus on Fintech and its contribution to financial inclusion in Africa, b) were written in English, and c) were written between 2013 and 2023.

The following keywords were used in the search: “Fintech” and “Africa”, “Mobile Money” and “Africa”, “internet based fintech payments” and “Africa”, “electronic payments” and “Africa”, and “Africa”, “digital money” and “Africa”, “Fintech” and “Financial Inclusion” and “Africa”.

After identifying potential contributing studies, the found results set was screened further, and only research papers relevant to the process of answering the research questions were included for data extraction. Furthermore, the studies had to have been published in peer-reviewed conference proceedings or journals. Some papers merely mentioned the term Fintech but do not necessarily contribute to the purpose of the research. Several papers were also excluded because they were not carried out in the specified geographic area. Lastly, only papers written between the years 2013 and 2023 were included, as the authors wanted to focus on the past ten years.

After the papers were extracted, the abstracts were reviewed to determine whether the content spoke to the research questions and whether they met the inclusion criteria discussed above. The papers that met the criteria were then identified for a full review.

The search has identified the following papers as relevant to the research:

Mobile Money	(Baganzi & Lau, 2017; Bank for International Settlement, 2017; G. Bongomin et al., 2021; G. O. C. Bongomin et al., 2023; Chikalipah, 2020; Dorfleitner et al., 2017; Fersi et al., 2023; Feyen et al., 2019; IMF, 2021; Jack & Suri, 2011; Levine, 2005; Marco Espinosa-Vega et al., 2020; McKenzie & Slind, 2019; Munn et al., 2018; Okello Candiya Bongomin et al., 2018, 2018; Tok & Heng, 2022; Triodos Investment Management, 2019; Urueña-Mejía et al., 2023; Xiao & Watson, 2019)
Internet-based (Electronic) Payments	(Cobla & Osei-Assibey, 2018; Ediagbonya & Tioluwani, 2023; Evans, 2018; GSMA, 2021; Mpofu & Mhlanga, 2022; Museba et al., 2021; Myeni et al., 2020; Nair & Emozozo, 2018)
Digital Money	(Adetunji & David-West, 2019; Horne et al., 2015; Kaur, 2022; Nutassey et al., 2023; Okocha & Awele Adibi, 2020, 2020; Osakwe et al., 2022; Prior Sanz & De Lima, 2013; Siegel & Fransen, 2013; Simatele, 2023; Simatele & Mbedzi, 2021; Twumasi Baffour et al., 2021)

IV. RESULTS

A. MOBILE MONEY

According to Adrian & Mancini-Griffoli (2019), mobile money refers to a digital medium of exchange and storage of financial value that uses mobile money accounts facilitated by mobile network operators or companies that ventured into partnerships with mobile network operators. However, it is not the same as mobile banking, commonly offered by traditional banks. Mobile money has become instrumental for individuals without access to traditional banking because they only need a basic mobile phone (IMF, 2021).

Formal banks normally serve formally employed people with regular income, and this leaves out the informal sectors, as well as the unemployed. Mobile money has, however filled this gap, hence broadening the financial inclusion (Mpofu & Mhlanga, 2022). There are many mobile money companies that have seen extensive growth over the years, such as M-Pesa of Kenya, Eco-cash of Zimbabwe, as well as Ewallet of South Africa (GSMA, 2021). According to Munoz et al. (2022), by 2019, 469 million mobile accounts had been registered in Sub-Sahara Africa. 2/3 of global mobile money transactions by value and volume are made in Africa (Munoz et al., 2022). In this section, we analyze studies focusing on mobile money and the progress made in Africa towards financial inclusion.

Nair & Emozozo (2018) evaluated the impact and prospects of mobile money in Kenya, known as the M-Pesa, a privately issued inside money, which evolved as an entrepreneurial response to the lack of traditional monies. It describes the institutional framework within which M-Pesa and other moni evolved while highlighting how competitive forces led to mutual acceptance of competing inside monies, lower prices, and greater choice for consumers. The case of M-Pesa and other electronic monies illustrates the potential for entrepreneurial and market processes in money given the right institutional setting, especially in developing countries. M-pesa was initially tailored to serve the financially unbanked population, with no intention of replacing or competing with the formal banking sector. The idea was to provide banking options for those who were not engaged in traditional banking. Nair & Emozozo (2018) claim that there has been an increase in the numbers of the formally banked population since the launch of M-Pesa. In 2018, Kenya was ranked the highest in Africa for easy access to financial services.

Evans (2018) examined the relationship and causality between the Internet, mobile phones, and financial inclusion in Africa for the 2000-2016 period and found a significant positive relationship between the Internet and mobile phones and increased financial conclusion. Similarly, Odei-Appiah et al. (2022) examined the usage of mobile money services in Ghana. They alluded that no special skills are required to use these services but mere mobile phone ownership. Therefore, with the continuous increase in mobile phone adoption, mobile money plays a significant role in financial inclusion in the region. Malanga & Banda (2021) also carried out a similar study in Malawi, in which they explored the use of mobile money by microenterprises and found that it is favored by informal entrepreneurs that own microenterprises because it helps reduce transport costs to go to banks when they can instead transact through mobile money. This service addresses the challenges that owners of microenterprises face due to limited access to formal financial services.

Furthermore, Myeni et al. (2020) carried out a similar study in Eswatini to examine factors associated with the usage of mobile money and the extent to which mobile money increases financial inclusion in the country. The study found relatively different results in that the authors found those who own a bank account are more likely to use mobile money. In addition, the study also found that the uneducated and those in rural areas are the least mobile money users. This observation suggests that mobile money may not improve financial inclusion in the country, considering it greatly benefits those with access to formal financial services.

A study done to analyze the use of mobile money in Cameroon revealed that factors such as education and the standard of living affect the use of mobile money services (Kaur, 2022). It found that people with a high standard of living are more likely to use the sending and receiving of services. This also agrees with the study's results by Avom et al. (2022), which also found that the level of education impacts the adoption of mobile money positively. The study further found that urbanization affects the use of mobile money, and financial transactions normally occur so that people in urban areas send money to people in rural areas (Okocha & Awele Adibi, 2020).

Osakwe et al. (2022) examined the key factors that can enhance initial trust in mobile money in Nigeria. The study further examined whether trust in the service contributes to

the perceived value of mobile money. The perceived reputation of the company offering the service engenders trust in mobile money, enhancing the perceived value and use of the service. Furthermore, perceived structural assurance, which refers to the extent to which mobile money operators are perceived to be fair and honest, was also found to impact initial trust in mobile money positively. These findings are similar to those in Uganda studies (Baganzi & Lau, 2017; G. Bongomin et al., 2021), exploring how mobile money users' trust affects mobile money services adoption. Both studies found the structural soundness of mobile money operators to positively impact the intention to use mobile money services. Looking from a broader perspective, these results align well with general collaboration between multiple actors, where higher trust levels reduce a need for complicated contracts and agreements, and more effort can be put into the actual productive actions (Happonen & Siljander, 2020), less time and untrust related hesitance is consuming resource in the lost pile of non-productive actions / operations / task execution.

Bongomin et al. (2021) further established that hedonism improves mobile money adoption, promoting financial inclusion in small and medium enterprises in Uganda. The study alluded that it is crucial for mobile money platforms to be user-friendly and contain attractive hedonic features that are pleasurable to the user. It further emphasizes that a combination of financial technology and psychology can promote financial inclusion. This agrees with the findings of the psychological scholar (Brown et al., 2010), who argued that hedonism plays a major role in the acceptance of new technologies.

Baffour et al. (2021) examined the impact of mobile money access to remittances and found that mobile money users receive more remittances than non-users. According to the study, the majority of remittances are received through mobile money transfers, in comparison to other means such as bank transfers, agents such as DHL and Western Union, and remittances sent home by immigrants. It can be said that mobile money is very convenient because it does not require users to have a bank account (Baffour et al., 2021).

Arslan et al. (2022) found that mobile money plays a significant role in creating social value for entrepreneurs in Sierra Leone by providing transactional security, increasing convenience, and decreasing cash robberies among street entrepreneurs. In

a similar study, Mohamed & Nor (2023) also found that mobile money improved access to finance in Somalia, increased consumer spending, and boosted trade openness. According to the study, since agricultural goods are the main Somalian exports, mobile money has positively affected the availability of funds to farmers and improved their ability to save money and receive credit to improve their agricultural production. Mobile money is like easily accessible, mobile, and open to all information, which, if collected and shared in open digital citizen science ways (Palacin et al., 2020) also contributes to the experienced social value.

However, the study also stressed that mobile users are experiencing the challenge of usage charges. Since traditional banks have also joined the mobile money sector by creating joint ventures with mobile phone operators, they continue to charge high traditional charges for customers utilizing their services. Arslan et al. (2022) also argued that fintech charges must be regulated to increase entrepreneurs' affordability and usability.

On the other hand, Adetunji & David-West (2019) investigated the drivers of financial inclusion in Nigeria and the lack thereof, and found that lack of knowledge about mobile money contributes greatly to the low utility of the service in the country. The study suggested financial literacy and awareness programmes towards mobile money. Similarly, Chikalipah (2020) also found illiteracy to significantly contribute to low financial inclusion in Sub-Sahara Africa. Furthermore, Odei-Appiah et al. (2022) also identified the digital divide as having a negative impact on the use of mobile money, which can engender financial inclusion. Ediagbonya & Tioluwani (2023) found illiteracy, poor infrastructural facilities, lack of power supply, poor mobile receptions in rural areas, unstable banks' networks, and high service charges to be some of the main issues experienced by mobile money users. Considering the needed growth in the levels of awareness, it would make a sense to map different factors for the reasons explaining the lack of awareness and on another hand, to study true motivational sources and drivers (Palacin et al., 2020), people have been and will be willing to self motivate (Santti et al., 2020) to increase their knowledge level and activities in this and other related issue.

Study by Cobla & Osei-Assibey (2018), aimed at providing insights into behavioral intentions by users to adopt mobile

money services, found awareness and educational attainment to have played a big role in influencing the intention of mobile money users. Uneasiness and fear that something might go wrong while using the service, caused by a lack of awareness and understanding of the processes involved, make users skeptical about using the service. However, the more they become familiar with the service, the more they are likely to use it. Museba et al. (2021) also recommend mobile money service awareness, customer education, and product availability as the main ingredients for mobile money adoption. Nutassey et al. (2023) studied the impact of an e-levy, introduced in Ghana on electronic transactions. They concluded that imposing it on mobile money contradicts the goal of increasing financial inclusion in the country, as it will threaten the intention to use the service. This agrees with the study by Pacheco & Rojas-Suarez (2017), which argued that e-levy is likely to affect financial inclusion, as low-income earners avoid transactions that involve high charges.

Bongomin et al. (2018) suggest that governments should create mobile money awareness about the importance and convenience of its use, and they should also regulate transaction fees for mobile money operators to attract the poor households that are excluded.

Table 1 summarizes the findings of the mobile money studies discussed.

Improvements caused by the use of Mobile Money	
A boost in trade openness	(Fersi et al., 2023)
A reduction in cash robberies among street entrepreneurs	(Arslan et al., 2022)
Availability of funds to farmers in rural areas	(Mohamed & Nor, 2023)
Social Value	(Arslan et al., 2022)
Transactional security	(Arslan et al., 2022)
Easy access to remittances for the unbanked	(Malanga & Banda, 2021; Myeni et al., 2020; Odei-Appiah et al., 2022, 2022; Twumasi Baffour et al., 2021)
Factors that enhance the use of mobile money	
Trust of the service	(Osakwe et al., 2022)
The perceived reputation of the company	(Baganzi & Lau, 2017; Okello Candiya Bongomin et al., 2018; Osakwe et al., 2022)
Perceived structural assurance	(Osakwe et al., 2022)
Hedonism	(Okello Candiya Bongomin et al., 2018)
No special skills required	(Odei-Appiah et al., 2022)

Factors negatively affecting the usage of Mobile Money services	
High traditional charges	(Arslan et al., 2022; Ediagbonya & Tioluwani, 2023; Mohamed & Nor, 2023; Nutassey et al., 2023)
Lack of awareness and knowledge	(Adetunji & David-West, 2019)
Illiteracy	(Chikalipah, 2020)
Poor infrastructural facilities	(Ediagbonya & Tioluwani, 2023)
Lack of power supply	(Ediagbonya & Tioluwani, 2023)
Poor mobile reception in rural areas	(Ediagbonya & Tioluwani, 2023)
Unstable banks' networks	(Ediagbonya & Tioluwani, 2023)
Uneasiness and fear that something might go wrong	(Cobla & Osei-Assibey, 2018)

B. INTERNET-BASED (ELECTRONIC) PAYMENTS

Today, the traditional payment systems of cash, cheques, and credit cards are supplemented by Internet and electronic payments. Electronic payments can be defined as any payment or transfer of money undertaken by using electronic means (Simatele, 2023). It allows one to make financial transactions electronically without any physical cash. It has, over time, become very popular because it is convenient, fast, and secure.

There are different electronic payment methods, such as credit/debit cards, online banking transfers and electronic wallets, such as Paypal, Samsung Pay, Google Pay, mobile payments, etc. Internet-based payments have made it easy for businesses to expand globally, making it possible for customers from all over the world to buy their products. According to Klapper & Singer (2014), electronic payments are important in increasing financial inclusion, as well as for achieving several of the UN Sustainable Development Goals. This section analyzes studies that looked at the usage of electronic payments in Africa.

Horne et al. (2015) examined how micro-entrepreneurs used electronic payments in Kenya and Tanzania in their businesses. The main form of electronic payment used by the interviewees was mobile payment. Most participants reported using mobile payments to pay their employees, receiving payments from customers, and purchasing goods from their suppliers. Some participants in rural Tanzania explained how they had to show customers how to use mobile payments to purchase goods, as they were unaware of the service. The study suggests marketing strategies and service awareness to mitigate the problem.

Prior Sanz & De Lima (2013) maintain that business models based on prepaid electronic payments systems and agent networks can help address the problem of lack of access to financial services observed in the vast majority of developing countries. In their study titled 'The Uptake of the Mobile Financial Services in the Middle-East and North African Region', Prior Sanz & De Lima (2013) reviewed the development of mobile financial services (MFS) in nine countries, namely Morocco, Algeria, Tunisia, Egypt, Israel, West Bank, and Gaza, Jordan, and Lebanon, as a way to solve the supply-related problems that explain the low access to finance rates in these countries. They claim that adapting the regulatory framework is the most important challenge for the uptake of MFS initiatives. They further postulated that MFS business models can extend access to finance to the unbanked by reducing transaction costs through the use of prepaid platforms, agent networks, alternative risk management policies, optimization of remittances, and new or reformed retail payments architectures. Finally, they observed that MFS initiatives could -greatly favour the development of the microfinance sector.

Finally, in Southern Africa, Simatele (2023), argues that electronic payments are key to improving financial inclusion and achieving global development goals such as the United Nations' (UNs) Sustainable Development Goals. The benefits are premised on the welfare-enhancing effects of digital payments, which reduce costs, the probability of loss and risk for low-income consumers, as well as improved access to formal financial services. (Simatele & Mbedzi, 2021) thus investigated the conditions under which these welfare-enhancing gains can be obtained. Considers the conditions under which e-payments can be welfare-enhancing by using qualitative data from Zimbabwe. The severe liquidity constraints in Zimbabwe provided a case for evaluating how well e-payments work, as the relative absence of cash has made using mobile money inevitable. The results indicate that the key challenges households face with payment systems include high costs, system malfunctions at the point of sale, lengthy refund processes, and limited acceptance. Participants indicated a strong preference for foreign exchange cash as a mode of payment. High levels of concentration in the mobile money market, lack of transparency by financial service providers, and a strong preference for cash by retailers are the main drivers of system failure.

Mobile banking allows speedy, easy, and cheap money transfer opportunities. However, it is not always feasible due to insufficient financial infrastructure (Siegel & Fransen, 2013). Another study looked at the adoption of mobile banking in Nigeria (Okocha & Awele Adibi, 2020). They also agreed that although mobile banking offers many advantages in performing financial transactions, several constraints still affect its adoption. Such constraints include information technology illiteracy, the age of potential users, limited financial infrastructures, and other technological challenges. However, there is a continuous shift towards removing the barriers affecting mobile banking (Kaur, 2022).

The review of literature in this section demonstrates that the feasibility of a specific electronic payment system depends upon how the providers overcome the practical and analytical challenges faced by various means of online payments. These challenges include issues of law and regulation (buyer and seller protection), technological capabilities of e-payment service providers, commercial relationships, and security considerations such as verification and authentication issues.

C. DIGITAL MONEY

Digital money refers to monetary value that exists solely in electronic form. There are three common types of digital money, namely: cryptocurrencies, central bank digital currencies, and stablecoins (IMF, 2021).

Cryptocurrency refers to a digital currency that operates based on cryptography and is maintained by a decentralized system rather than by a centralized authority (Vincent & Evans, 2019). It is used to perform financial transactions, such as storing value or making payments using blockchain technology (Ha & Moon, 2018). Cryptocurrencies are perceived as a valuable tool in delivering financial services and increasing financial inclusion (Gadzinski et al., 2023). Bitcoin, Ethereum, Dogecoin, and Tether are some of the most well-known and common / commonly used cryptocurrencies (Náñez Alonso et al., 2021).

Considering that cryptocurrencies were rapidly gaining momentum, central banks deemed it fit to look into the possibility of creating their own digital currencies, which are to be regulated by the issuing bank (Ozili, 2022). A central bank digital currency, commonly referred to as CBDC, refers to a central bank-issued digital currency that serves as a digital store of monetary value, which is equivalent to cash but stored

in digital form and linked to the national currency. CBDC has the capability of leading countries to greater financial inclusion for 'unbanked' informal workers (Ozili, 2023).

Stablecoin refers to an asset unit whose value is relative to a unit of another asset. Traditional stablecoins peg their values to fiat money such as a Euro or a US Dollar (Gadzinski et al., 2023). This section analyzes studies that looked at the adoption of digital money in Africa.

Mazambani & Mutambara (2020) examined factors that influence the intention to adopt cryptocurrency in South Africa. The study found attitude and perceived behavioral control to have a positive impact on the intention to adopt cryptocurrency. It also suggests that policy strategies with a focus on influencing customers' attitudes and behavioral control should be put in place in order to increase the intention of adopting cryptocurrency. The study further suggests that financial institutions need to take the lead in demonstrating the benefits of cryptocurrency, and it also argues that the visibility of the available currency platforms in local media, endorsed by local influencers, can increase the intention of use among citizens.

Vincent & Evans (2019) investigated the relationship between cryptocurrency, internet usage, mobile phones, and financial inclusion in several countries, namely China, Nigeria, India, and South Africa. The study suggested that the rising levels of cryptocurrency and an increase in the usage of the Internet and mobile phone subscriptions have significantly improved financial inclusions in the studied countries.

Mavilia & Pisani (2020)investigated how blockchain technology can be a valuable support for Africa and found that it can help increase financial inclusion in several ways. The study argued that blockchain technology would help users avoid travel costs incurred from going to banks, as it could allow the creation of bank accounts via mobile. It would also mitigate high transaction costs banks charge, as most existing processes would be automated. However, the study has acknowledged that good financial infrastructures and stable and strong internet connectivity are fundamentals of blockchain technology, but several African countries might not currently be in sufficient possession of them.

There are currently six countries that have adopted CBDC in the world, with Nigeria being the only African country (Ozili, 2022).

Ozili (2023) investigated the determinants of the interest in Nigerian CBDC among Nigerian citizens and its impact on financial inclusion. The study found an interest in fintech information to have a positive impact on an interest in Nigerian CBDC, known as eNaira. Therefore, the study suggests information campaigns to be made across multimedia, with the aim of educating citizens and providing them with information on Fintech and eNaira, as awareness will help in achieving financial inclusion. A similar study by Ekong & Ekong (2022) investigated the impact that the CBDC has had on the country's economy since its inception and found an increase in Automatic teller machines usage, Point of Sale transactions, as well as an increase in the usage of Mobile pay channels.

Similarly, in West Africa, Ahiabenu (2022) conducted a thematic analysis of the design of Central Bank Digital Currency (CBDC) through a comparative case study of Ghans's eCedi, a proposed CBDC for Ghana, and Nigeria's eNaira design framework. Several central banks expect CBDCs to create potential benefits such as improvements in currency function, efficiency, and safety of payments while serving as a policy response to payment innovations, including privately issued e-money and digital currency (Fung & Halaburda, 2016).

Ahiabenu's (2022) study findings highlight that Mobile money wallets are one of the most dominant forms of payment in Ghana and Nigeria, and both design documents suggested that a CBDC offers mobile money operators the ability to offer additional payment features. However, none of the design documents provided information on how a CBDC will interact with mobile money or addressed whether a CBDC will compete with or replace mobile money. This is because a CBDC is similar to mobile money in many ways. The issue of financial inclusion becomes an important context in the deployment of CBDCs because financial inclusion holds the promise of providing a mechanism that can ensure persons outside the banking sector can consume formal financial services.

The adoption of fintech services such as crowdfunding, cryptocurrency, third-party remittances, and central bank digital currencies remains relatively low in Africa (Coffie & Hongjiang, 2023). As a result, there is currently a lack of African digital money studies. Due to the high increase in mobile phone adoption in the region, the main fintech service in Africa is mobile money and other related payments powered by mobile devices (Yermack, 2018).

V. CONCLUSION AND RECOMMENDATIONS

Our systematic review assesses the status quo of Fintech in Africa and the role of FinTech financial inclusion enhancement. We analyzed academic literature on FinFech, focusing on Africa, guided by the suggested FinTech segments (IMF, 2021). The literature indicates that while cash still dominates most African countries' economies, a drive for payment system modernization and keen innovation in the FinTech and mobile sectors is creating significant change within their financial markets. However, several factors keep limiting the wide adoption of FinTech. These limitations include a lack of awareness about interoperability, mobile network-related problems, high barriers to customer entry, and concerns regarding system security and digital money safety.

The literature analysis indicates that smartphone diffusion in Africa contributes greatly to financial inclusion. Many financial processes can now be done on phones and online. People do not have to travel to a bank within their limited service hours and, public holidays just to be able to make payments. In addition, the unbanked can now also receive remittances on their phones without owning a brick-and-mortar bank account.

Mobile money services seem to play a great role in financial inclusion due to the rapid penetration of mobile phones in Africa. As Odei-Appiah et al. (2022) have found, using mobile money does not require any special skills, one only needs to be literate. Several studies have however mentioned the importance of mobile money services awareness (Adetunji & David-West, 2019; G. O. C. Bongomin et al., 2018; Cobla & Osei-Assibey, 2018; Horne et al., 2015; Museba et al., 2021; Ozili, 2023). Based on their findings, one of the reasons why Fintech is not fully utilized is due to lack of knowledge. Therefore, it is recommended that Fintech providers make efforts to raise awareness of their services and offer training among communities regarding their services.

Recent studies Ediagbonya & Tioluwani (2023); Mohamed & Nor (2023); Myeni et al. (2020); Nutassey et al. (2023) also agree that high transactional charges are affecting microentrepreneurs utilizing mobile money, who were unable to be integrated into formal banking services. As long as the charges are high compared to the amount of money being transacted, people will prefer to use cash to avoid these fees. As a result, they were negatively affecting the financial inclusion goal. It is therefore recommended for financial

institutions regulators, and policy makers to regulate the charges. The charges need to be as low as possible to motivate small business owners to want to become part of the system.

It is interesting to note that the majority of the studies on mobile money are done in West and East Africa. Studies in SADC region are recommended to understand how mobile money is being utilized and what impact it has on financial inclusion in the region.

Even though electronic payments are perceived to be convenient and secure, they seem to be mostly utilized by informed users who own bank accounts and by companies who see service cost benefits as justified for the achieved business benefits. Hence, they do not seem to significantly impact financial inclusion. Lack of awareness, Information Technology illiteracy, and lack of financial infrastructure are also some of the challenges hindering the use of internet-based payments. Therefore, banks need to make efforts to raise awareness and provide literacy on mobile banking. This can be achieved by utilizing social media platforms.

There is currently a lack of studies on CBDC. After covering all the databases included in our study, we only came across five relevant studies regarding Nigerian CBDC. One of the studies indicated that the development of digital currency has derived positive results for financial inclusion for the country and an improved use of mobile pay channels. It suggested that further penetration in the country will affect financial inclusion by at least 2%. However, the subject of CBDC does not seem to be well-known in many parts of the country. Therefore, the government should carry out campaigns in communities on the subject. There is also a need for further research in the area that can serve as a blueprint for other African central banks planning to implement CBDCs., focusing on best practices and lessons learned.

Moreover, literature shows that adopting electronic payment systems (particularly mobile payment systems) in African countries has grown significantly over the last decade and is driven by wider outreach from these countries' financial services organizations to unbanked populations in rural and urban areas. It appears that the main uses for mobile money in most African countries are for simple uses such as airtime purchases and sending and receiving money, which suggests a call for more sophisticated payment uses. This will require the different stakeholders: Fintechs, banks, government,

telecommunications, and others, who are spearheading the transformation of electronic payment mechanisms to collaborate to solve the continent's financial inclusion challenges. For example, Fintech companies could partner with banks and develop requirements allowing unbanked individuals to open traditional bank accounts if they could keep a good credit record within their mobile money accounts for a specified number of years. This collaboration will require a balanced regulatory framework that not only protects the safety and security of the payment system but also encourages innovation from the stakeholders to create and deliver new payment mechanisms to those previously excluded. From a technology development point of view, actors contributing to the digital transformation of fintech services towards wide accessibility in crowds of unbanked population should extend their collaboration to university-industry innovative (Happonen, Minashkina, et al., 2020) shared digital solutions development direction (Happonen, Santti, et al., 2020), for more formalized collaboration models (Salmela et al., 2013). Especially reaching out toward different generations of higher education unit students who classify themselves as part of the unbanked user groups to develop services that are ground up built from the target groups' own factual needs.

There are also other fintech segments, such as online crowdfunding, that utilize technology to raise funds. This can benefit the unbanked, enabling them to access funds from potential donors and reduce reliance on traditional banks. This area should be considered for future work to investigate its impact in African countries.

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