



**REPUBLIC OF TÜRKİYE  
HALIC UNIVERSITY  
INSTITUTE FOR GRADUATE STUDIES**

**THE EFFECT OF DIGITAL FINANCE ON AFRICAN  
ECONOMIES: THE CASE OF KENYA**

**FAMALE CHEICK DEMBELE  
DEPARTMENT OF BUSINESS ADMINISTRATION**

**MASTER'S THESIS**

**ADVISOR  
Asst. Prof. Çağın ERBEK ALAYBEYOGLU**

**ISTANBUL 2025**





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ÖĞRENCİ ÖDEVLERİ

BİRİNCİL KAYNAKLAR

- 1** David Mhlanga, Mufaro Dzingirai. "Financial Inclusion and Sustainable Development in Sub-Saharan Africa", Routledge, 2025  
Yayın % **1**
- 2** www.scirp.org  
İnternet Kaynağı % **1**
- 3** David Mhlanga. "Digital Financial Inclusion", Springer Science and Business Media LLC, 2022  
Yayın % **1**
- 4** www.intjeee.org  
İnternet Kaynağı % **1**
- 5** "E-Financial Strategies for Advancing Sustainable Development", Springer Science and Business Media LLC, 2024  
Yayın % **1**
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## **THESIS ETHICS STATEMENT**

I declare that I completed this study titled “ The effect of digital finance on African economies: The case of Kenya” which I present as a Master’s Thesis, from the beginning to the end under the responsibility of my advisor Çagin ERBEK ALAYBEYOGLU, that I collected all the data and samples by myself, I did the experiments or analysis / I had the experiments or analysis done in the related laboratories, that I have fully indicated the information I have received from other resources in the text and bibliography, that I have acted in accordance with the scientific research and ethical rules during the study process, and that I accept any legal consequences if otherwise occurs.

Famale Cheick DEMBELE

# ÖZET

## DİJİTAL FİNANSIN AFRİKA EKONOMİSİNE ETKİSİ: KENYA ÖRNEĞİ

Haliç Üniversitesi  
Lisansüstü Eğitim Enstitüsü  
İşletme Yönetimi Anabilim Dalı, Dönem Projesi  
Danışman: Prof. Dr. Çağın ERBEK ALAYBEYOĞLU  
Mayıs 2025, 59 sayfa

Yıllar geçtikçe, küresel ekonominin evrimiyle birlikte dijital finans önemli bir aktör olarak ortaya çıkmış ve finansal sistemi etkilemiştir. Birçok Afrika ülkesinde, nüfusun çoğunun, onları bu sisteme dahil olmamaya zorlayan çeşitli faktörler nedeniyle geleneksel bankacılık yapısının dışında bırakıldığını gözlemleyebiliriz. Dahası, bazı ülkelerde işlemlerin çoğunun sosyo-kültürel faktörler, yapısal ve altyapısal veya ekonomik gibi birçok kısıtlama nedeniyle nakit olarak yapıldığını gözlemleyebiliriz. Dijital finansal hizmetin özellikleri, büyük ölçüde kapsayıcılığı, işleyiş hızı, güvenli sistemi ve sosyal ve ekonomik büyüme için gelişmeyi destekleyen verimli çerçevesi nedeniyle, dijital finansal sistemin algısı ve finanslarının nasıl yönetileceği konusunda nüfus arasında büyük bir farkındalık yaratmıştır. Örneğin, bu sektörde lider olan ve nüfusun %70'inin bu hizmetleri kullandığı Kenya'daki durumu vurgulayabiliriz (Ann Njoki Kingiri ve Xiaolan Fu 2019). Önceki literatür incelemesinden ve 2017'den 2023'e kadar çevrimiçi araştırma yoluyla toplanan verilerden elde ettiğimiz birkaç dönem boyunca yaptığımız analizler sayesinde dijital finansal hizmetlerin finansal katılım ve ekonomik büyüme üzerinde bir etkisi olduğunu bulduk. Dijital finansal hizmetlerin Afrika ekonomileri üzerindeki etkisi: Kenya örneği başlıklı bu araştırma makalesi, öncelikle dijital finansal hizmetlerin Afrika'daki farklı coğrafi alanlarda GSYİH gibi ekonomik göstergeler üzerindeki etkilerinin ne olduğunu ve ikinci olarak kırsal ve kentsel alanlardaki yetersiz hizmet alan nüfuslar arasındaki katkıyı anlamaya çalışmaktadır. Araştırma, gelir, yaş, cinsiyet ve altyapı seviyeleri gibi faktörler nedeniyle zorluklar devam etse bile dijital finansal hizmetlerin etkisine dair kapsamlı bir resim sunmak için tasarlanmıştır.

**Keywords:** Ekonomik Kalkınma, Dijital Finans, Afrika Ekonomileri

# ABSTRACT

## THE EFFECT OF DIGITAL FINANCE ON AFRICAN ECONOMIES: THE CASE OF KENYA

Haliç University  
Graduate School of Education  
Department of Business Administration Term Project  
Advisor: Asst.Prof.Çağın ERBEK ALAYBEYOGLU  
May 2025, 59 pages

Over the years, with the global economy evolution, digital finance has emerged as a key actor and impacted the financial system. In many African nations, we can observe that most of the population are excluded from conventional banking structure due to several factors forcing them to be ineligible to this system. Moreover, we can observe that the majority of the transactions in some nations are done in cash due to many constraints such as socio-cultural factors, structural and infrastructural, or economic. The characteristics of digital financial service has created a major awareness among populations about the perception of digital financial system and how managing their finance, due in large part to its inclusivity, its speed of operation, secure system, and efficient framework that support the development for social and economic growth. We can highlight the case in Kenya for instance, our primary focusing which is leading in this sector and where 70 % of the population use these services (Ann Njoki Kingiri and Xiaolan Fu 2019). Through our analysis, over several periods from previous literature review and data collected through online research from 2017 to 2023 we found that digital financial services have an impact on financial inclusion and economic growth. This research paper entitled the effect of digital financial service on African economies: The case of Kenya seeks to understand firstly what are the effects of digital financial service on economic indicators such as GDP across different geographical areas in Africa and secondly to understand the contribution among the underserved populations in rural and urban areas. The research is designed to give a thorough picture of the impact of digital financial services even if challenges remain due to factors such as income, age, gender and levels of infrastructure.

**Keywords:** Economic development, Digital finance, African economies

## **PREFACE**

This project was made possible thanks to the help of several people to whom I would like to express my gratitude.

First of all, I would like to express my gratitude to my thesis advisor, Assistant Professor Çagin ERBEK ALAYBEYOGLU, for her availability and her judicious advice. I would also like to thank all my professors at Haliç University during these years, they provided me essential tools for the success of my studies.

I dedicate this thesis to my grandmother MAHADY DANSIRA, may her soul rest in peace, the one who constantly pushed me to work hard at school.

To the whole family, especially my auntie CIRU for her support since day one, to my mother ROUGUIYATOU my daily source of motivation and my father CHEICK FANTA MADY DEMBELE my role model.

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APRIL, 2025

Famalé Cheick DEMBELE

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## **ABBREVIATIONS**

CBN : Central bank of Nigeria

CBK : Central bank of Kenya

DFS : Digital financial services

IFC : International finance corporation

GDP : Gross domestic product

KRA : Kenya revenue authority

PSB : Payment service bank

SME : Small and medium enterprises

TIS : Technological innovation system

## **SYMBOLS**

GWh : Gigawatt hours

Ksh : Kenya shilling

Usd : U.S. dollar

# 1. INTRODUCTION

In the past decade, the convergence of mobile technology and new financial services has driven the uptake of digital financial services around the world, particularly in African countries, with an outsized, truly significantly global impact on the architecture of the financial framework. This advancement has fostered financial inclusion and stimulated economic development. In Africa, where much of the population is poor and where there is no access to conventional banking systems due to various obstacles such as lack of money, high banking fees, geographical distance from branches, lack of proper documentation, and low literacy rates, we can observe that digital financial services have emerged as a dependable alternative for those traditionally excluded from financial systems. These services have helped millions to surmount barriers to financial access. Traditional banks, notwithstanding, they are still very important, but we all know that there are now more mobile money account holders than there are bank account holders

This study therefore seeks to assess the relationship between economic development and digital financial services uptake based on the experience of different African economies, and a highlight on Kenya. Kenya is widely regarded as a pioneer in Africa's context of financial digitalization, owing much to the compelling case between Vodacom and Safaricom that brought to life the M-Pesa mobile money platform. M-Pesa will be the primary focus, as its effects have been far-reaching, in the country (in general and on population). This financial engine's success story began in early 2020, when Vodacom and Safaricom bought the M-Pesa brand from Vodafone Group via a new joint venture. The M-Pesa report has revealed that this partnership has helped 'incredibly' in fast-tracking the expansion of this combination across the African continent by which both Lumia and Microsoft equipped with full control of brand, product, development and customer support offerings as well as positioning in additional African markets. M-Pesa serves millions of people with mobile phones who don't have a bank account or who have limited bank access, offering a safe and cheap way to send and receive money, pay bills and and receive loans. The market is

dominated by M-Pesa, which is used by 70% of Kenya's population (Ann Njoki Kingiri and Xiaolan Fu, 2019). Over 80% of Kenyans will be able to participate in the formal economy with the uptake of digital financial services that increase accessibility for marginalized segments including farmers and small business owners, according to the Central Bank of Kenya. I mean people of all walks of life with only a mobile phone will be a part of driving the economy. The World Bank (2016) reported that, "Mobile communications has arguably impacted humankind more in less time than any other technological development in human history" While its employment, economic efficiency and inequality effects have been positive, digital finance confronts several challenges.

This mechanism continues to be a source of continuous worry for the regulators, as it absorbs financial support from a large section of the society and contributes significantly in the GDP per capita. In his research, Amadou (2019) notes that Sub-Saharan Africa handles nearly 10% of its GDP with the help of mobile money transactions, and Asia comes in second with around 7%, and the other parts of the world hovering around 2% of GDP through mobile money transactions. This study is set out to investigate the prospects and challenges of digital financial services in african economies with a comparative approach to the Kenyan people. This study addressed the need to continue to innovate in this area-tools and studies by arguing that acceptance and use of DFS is very crucial for individual, authorities and country as a whole as it serve as channel of development

## **2. PURPOSE, METHODOLOGY AND RESEARCH QUESTION OF STUDY**

Several project and studies about digital financial services have been conducted over the years to better understand the impact of this system. Many studies have shown that digital financial services play a major role in financial inclusion. Previous research has shown that the invention of digital financial services has contributed to improve small and medium enterprises productivity, economic growth, and has significantly impact social aspect particularly for women and rural communities that have gained financial empowerment. We can speak of the multifunctionality of digital financial services since it constitutes a primary factor of financial independence for women (Suri and Jack, 2016). In addition, small and medium enterprise using digital financial services experience higher revenues (Beck et al. 2018).

The key findings reported from various sources on the impact of digital financial services on African economies, are that, in general, the implementation and adoption of these services for a full efficiency required deep collaboration of the major actors in the financial sector, fintech, and government. The latter are in charge of the sector operations and performance. Managing the, efficiency, consequences of competitiveness, cybersecurity threat, fraud and data privacy, as well as economic and social development necessitate modernization and regulation of the digital financial services sector. It should be noted that digital financial services have promoted financial inclusion for unbanked populations particularly in Africa when only 69% of adults in Africa had an account with a financial institution or through mobile phone compared to 94% for the rest of the world (Demirgüç-Kunt et al 2018).

The question of the impact of digital financial service is a permanent concern in the world where question remains unclear if we should more digitalizing transactions. The main purpose of this research paper is to explore the relationship between the impact of the adoption of digital financial services and economic indicators such as GDP by comparing African nation experiences focusing on Kenya

through its strengths and limitations. Our work study will focus on four points. The first two points which are descriptive will discuss and better help to understand the role of finance in capitalism and emphasize on the necessity of digitalizing finance. The third part will be more theoretical and emphasize on the impact of this invention in Kenya and in Africa. The final section of this project will concentrate on the macroenvironment impact, the challenges and provide recommendations. To achieve this, the methods and tools used for this thesis project employs a qualitative approach based on content analysis. This methodology allows us to have an overview on how digital finance is discussed in the context of economic impacts, track shifts in policies and outcomes related to digital finance in Kenya and other African countries economies.

We sought to better understand how digital finance has influenced these variables through data that we will gather from sources such as previous governments reports, scholarly articles, data from companies like Safaricom, the Central Bank of Kenya and industry publications. The study addresses the following research questions: What is the importance of finance in an economy in general ? What is digital finance? How have digital financial services impacted Kenya economic development and financial inclusion ? What are the effects of digital financial services on African economies? What are the effects of digital financial services in Kenya ? How does the adoption of digital financial services can influence economic indicators? What are the key drivers behind the widespread adoption of digital financial services in Kenya? What challenges and limitations exist in scaling digital financial services to others African economies ? There are currently a few studies into this sector specific impacts, particularly on Kenyan economic growth. This work seeks to bridge the gap through our modeling.

However, the doubt exists about the reliability of the report and statistics collected, as Africa nations are generally less equipped with qualified staff and financial terms to carry out rigorous, demanding and frequent. This situation compromises the chance of having series allowing to carry out analyzes over a long period, capable of identifying structural changes in the economies concerned. Nevertheless, we believe that the results are sufficiently in line with the reality of the situation in the countries in which we are conducting our study.

### **3. UNDERSTANDING THE ROLE OF FINANCE IN CAPITALISM**

The term "finance" is characterized by several definitions. In their studies Ross, Westerfield and Jaffe (2019) describe the term finance as a field which emphasize primary on making financial decisions and investing to maximize value. They divided finance into three sections : financial institutions, investments, and corporate finance. Hilferding in his study defines finance capital as capital controlled by banks and employed by industrialists. Moreover, he states that financialization is characterized by the growing domination of finance over other economic sectors and by the asymmetry between production and circulation. Additionally, it highlights the three primary underlying trends that define financialization. Firstly, the non-financial businesses which are increasingly involved in the financial sector. Secondly, banks that prioritize financial markets, transactions and households as a way to generate money. Finally, households whose income is becoming more and more financialized and whose access to products and services is becoming increasingly dependent on the financial system (L. M. Lachmann, Finance Capitalism).

Findings found have shown that we can closely associate financialization with neoliberal ideology, labor concept, financial market deregulation, and the reduction of public services, they have a strong link. Nonetheless, some research believes that financialization is an indication of reducing economic power. It should be noted that the 2007 global financial crisis made clear the predominant place of financialization and its potential to cause disastrous events across the world financial markets and banking system. Several Marxist theories also explain the origins of financialization, as an answer to the expansion of capital and the decline of hegemonic power. For instance, in his study Karl Marx defines financialization as being a structural transformation of capitalism, and not a simple flight of capital towards finance. The concept has its origin in a structural transformation of capitalism which has accelerated since the 1970s and which is characterized by an unprecedented expansion of financial

activities, a rapid growth of financial profits and a domination of economic policies by the concerns of the financial sector. (The financialization of capitalism: 'Profiting without producing'). We can highlight Costas Lapavistas theory of financialization, which draws similarities in terms of Marxist ideology. He emphasizes the term financialization as a systemic transformation of mature capitalist economies. Moreover, his concept is based on three interconnected characteristics. Firstly, the large firms developing their own financial capabilities, the banks moving into open financial markets, and households involved in financial transactions (Profiting without producing: How finance exploits us all, 2013 ).

In most of the previous theories found have shown that, financialization is characterized by "financialized" interactions among non-financial enterprises, banks, and households, and can be observed by three primary trends. According to Michel Foucault studies emphasize that the first being the increased involvement of non-financial businesses in financial operations. Secondly, banks interact with financial markets and households to make profits but which we can also be considered as central actors in the circulation of capital by facilitating monetary flows (Naissance de la biopolitique, 1979). Finally, households that increasingly rely on the financial system to get essential products and services for their daily lives.

However, it should be noted that the study of financialization must consider the historical and institutional characteristics of each nation. For instance, financialization occupies a smaller part in emerging nations. Economic activities between developed and emerging nations are complex, they are caused by the accumulation of constraints in developing countries. We can highlight that finance in capitalism has a multitasking role and brings together all the players in the world of finance and economy even if traditional financial institutions frequently fail in marginalized communities. It drives industrial and economic growth by supporting banks and financial markets in providing resources to productive sectors, it also promotes stability in investments by acting as a financial tool for managing uncertainty. While on the social level and in addition to involving all classes of the society by reducing socioeconomic disparities and promoting those already involved in the formal economy, it ensures that the underprivileged in the informal sector have access to money thanks to the innovation in as well as the implementation and adoption of digital finance. Nevertheless, finance in capitalism traditional forms has been criticized for perpetuating exclusion. To

overcome these challenges, digital finance has been integrated into the capitalist financial framework, enabling access to financial systems for people who have previously been excluded.



## **4. KEY DISCUSSION ON DIGITALIZING DIGITAL FINANCE**

Previous studies found defined digital finance as “financial services delivered through mobile phones, the internet or cards (Manyika, Lund, Singer, White and Berry, 2016) ). In their studies, Gomber Koch and Siering (2017) states that fintech companies through digital financial service offer a variety of new financial items, financial businesses, finance-related technologies, and unique ways for customers to communicate and connect. Despite the lack of a universally accepted definition, it is generally agreed that digital finance encompasses all services, technology, infrastructure, and products that allow people and businesses to access credit, savings, and payment options online without the need to go to a bank branch or communicate directly with the financial service provider.

Overs the years, the rise of mobile phones has intensified the focus on the digitalization of financial services, particularly in global economies like Africa, which has significant potential for growth in this area. It is important to recognize that barriers to market entry have raised concerns regarding project reliability. Nonetheless, changes within the financial sector and the rise of innovative digital financial systems, such as mobile money platforms, have made implementation essential and have gained widespread acceptance among the populace

In Africa, where traditional banking infrastructure remains limited, digital financial services play a crucial role in enhancing financial inclusion and economic participation for millions of underserved individuals. A report by the United Nations (2016) defines financial inclusion as the sustainable provision of affordable financial services that integrate the poor into the formal economy. Financial inclusion can also be viewed as the utilization of formal financial services by low-income individuals (Beck et al., 2007; Bruhn and Love, 2014). In his study, Anarfo (2018) explored how digital technologies have made it easier for those who live in rural areas and can't afford a bank account to get additional financial services, which kept them from being

financially included. Similarly, research by Ansongu (2021) and Nchofoung (2021) indicated that digital financial services enhance the accessibility of the financial system and contribute to ongoing development.

Prior studies have demonstrated that digital financial services can stimulate economic growth by providing individuals and businesses of various sizes with easier access to a broad spectrum of financial products and services, thereby encouraging participation in the economy. The McKinsey Global Institute (2016) highlighted the significant correlation between digital finance and economic development. We can highlight the Kenya context which economic activity has greatly been impacted through the use of innovative financial platforms services like M-Pesa program. A study conducted by the GSMA (2023) showed that Kenya GDP was 8-10% higher with mobile money service by the end of 2023. Its impact on economic growth is in large part due to an estimated 70 % of the population that use their services (Ann Njoki Kingiri and Xiaolan Fu 2019). Consequently, the importance of financial inclusion for economic growth has emerged as a relevant topic, garnering interest from researchers. Digital money offers various advantages; for instance, the World Bank (2014) reported that around 50% of individuals globally own a mobile phone, which can enhance financial inclusion through the growth of digital financial services. Furthermore, digital money may provide economically disadvantaged individuals in developing nations with rapid, secure, and affordable access to financial services.

Digital finance also aids governments by creating a platform that increases overall expenditures, thereby contributing to greater tax revenue. Some studies suggest that digitalization and mobile money represent effective solutions for nearly half of adults in developing countries, particularly in Africa, who do not possess bank accounts. According to Degryse (2016), the digitalization of the economy promotes growth, welfare, and improves the effectiveness of public policies. Digitalization and mobile money facilitate access to banking and financial services for population groups that are traditionally excluded (Donner and Tellez 2008). Moreover, according to Perlman (2018) study states that approximately 690 million people in developing countries use digital financial services (DFS), which contributes to the acceleration of financial inclusion. Inclusion through digitalization can help accommodate the needs of disadvantaged populations, including women and rural people. The studies conducted by Perlman and Wechsler (2019) emphasize that mobile money is a key

determinant of access to financial services in rural areas. Despite its advantages, digital finance confronts several challenges. Firstly, we can highlight the regulatory and legal frameworks, in relation to cybersecurity, data privacy, and consumer safety. Secondly, challenges in literacy also create barriers to the optimal use of digital financial services. Thirdly, the socio economics barriers despite the increasing rate of mobile adoption, rural and marginalized groups are still unable to get cheap mobile phone or connect to reliable internet.

Even while digital platforms are still developing quickly, there will be numerous obstacles and disturbances along the way, so success is not guaranteed. Technology has the potential to bring about both positive and inclusive development impact, as well as negative alterations. For instance, there is a good chance that the adoption and spread of currently accessible digital platforms will dramatically improve living standards, expand access to healthcare and education, and boost agricultural and rural productivity. Additionally, developing nations may be able to follow an innovation path distinct from that followed by industrialized economies thanks to these new emergent technological platforms.

#### **4.1. Digital Finance in Africa**

Africa's financial sectors are becoming more digitally developed as a result of the COVID-19 pandemic. Many policymakers have advocated adopting digital payments in reaction to the epidemic in an effort to decrease the usage of cash and help people and companies deal with limits on economic activity and mobility. This has strengthened the trend toward cashless societies.

In this perspective, over the last decade, significant progress has been made in Sub-Saharan Africa regarding the ownership and utilization of financial accounts, with mobile money likely playing a crucial role. By either enhancing or supplementing current financial service providers, mobile money is contributing significantly to the growth of digital financial services, according to the results of earlier studies.

By 2021, it was evident that a greater number of adults in Sub-Saharan Africa held mobile money accounts compared to those with accounts at traditional financial institutions. According to a European Investment Bank

(2021) analysis, between December 2015 and December 2020, mobile money usage grew by over 200% throughout the continent, with most regions seeing annual increases. With 53% of all active mobile money accounts globally, over 160 million accounts, and nearly two-thirds of the \$70 billion in global transactions completed in December 2020, Sub-Saharan Africa leads the globe in mobile money accounts.

However, the region collapses behind of other regions in terms of indices of the value of financial services and reducing the gender gap in financial inclusion. To sustain the momentum of financial inclusion in Sub-Saharan Africa, there is a need for further efforts, emphasizing financial services and products that provide added user value. Between 2011 and 2021, the region experienced the highest growth in account ownership, and from 2014 to 2021, it matched South Asia for the fastest growth in account usage. Account ownership surged from 23% in 2011 to 55% in 2021, significantly exceeding the global average growth rate of 50% during the same period, which saw ownership rise from 51% to 76%.

Given that regions like Europe and Central Asia had a high baseline in 2011, it is not surprising that Sub-Saharan Africa recorded a remarkable increase in account ownership. However, according to Findex 2021, it still ranks among the top three regions globally for actual account ownership and usage. More than half of the world's unbanked population resides in seven economies, including Nigeria, the most populous country in the region.

We can highlight that over the years, the concept of digital finance has attracted the attention of several researchers who have proposed different definition. For example, Peak (2012) defined digital finance as a system or amalgamation of financial and economic advantages managed and delivered by specialists using mobile or web technologies. Conversely, Kemgou Voptia and Stukalina (2024) described "the digitalization of financial services" as encompassing all digital products and services within the financial sector, including credit cards, online banking, e-commerce platforms, and automated teller machines, as well as the diminishing returns associated with accumulating physical, human, and production capital.

Digital financial services, particularly mobile phone systems, are rapidly expanding, enabling millions of underserved populations to securely save, transfer money, pay bills, and access microloans. This financial innovation has seen remarkable growth in countries like Kenya and Nigeria, which are at the forefront of Africa's fintech landscape, significantly enhancing financial inclusion. Furthermore, the World Bank (2021) reported substantial growth in financial inclusion in Sub-Saharan Africa, largely driven by the rise in mobile money account adoption. The region continues to strive for greater overall access to accounts and equitable access based on gender, income, education, and age.

In Africa, traditional financial infrastructures are often insufficient and underdeveloped in terms of inclusivity. For instance, a World Bank (2011) report indicated that, on average, only 23% of individuals in Sub-Saharan Africa had a bank account, with even lower percentages in countries like Senegal and Mali. However, the digitalization of financial services has helped narrow this gap in some areas. According to the Global Findex (2021), the average percentage of individuals with bank accounts in Sub-Saharan Africa increased to 55% in 2021. In contrast, nations like South Africa exhibit relatively high bank account ownership. Research by Demirgüç-Kunt and Klapper (2012) identified factors such as high supply costs, geographic distance, lack of official documentation, low income, and inadequate infrastructure and education as significant barriers to financial inclusion in Africa. These challenges have prompted a transformation of the global financial landscape.

In this context, digital financial services have emerged as vital tools for financial inclusion in Africa. However, it is important to recognize that the adoption of digital finance, including mobile money, varies across different regions of the continent. As of 2022, 154 out of 315 global mobile money services were available in Sub-Saharan Africa, illustrating the swift growth of mobile-based financial services. East Africa is leading in mobile money usage, exemplified by M-Pesa, a mobile money platform that has dominated the market since its launch in Kenya in 2007, holding 80% of the subscriber base. Although the full-scale rollout was delayed, West Africa is rapidly catching up.

Conversely, mobile money adoption remains relatively low in North and Southern Africa, where traditional financial institutions are more established.

Small and medium-sized enterprises (SMEs) are crucial drivers of economic growth in developing countries, contributing 33% of total revenue and 45% of employment, as reported by previous OECD (2017) surveys. In Africa, where SMEs account for approximately 80% of all jobs, access to finance is essential. Digital finance presents a significant advantage by facilitating easier access to loans for individuals and enterprises, enabling them to engage more actively in the economy. Kikulwe, Fischer, and Qaim (2014) found that digital finance enhances individuals' ability to save and invest, boosts participation in the labor market and economic activities, and increases income levels. The GSMA (2019) reported that digital financial services contributed 52% of Tanzania's GDP in 2017 and 47% and 62% of Kenya's and Uganda's GDP, respectively. This financial innovation has garnered significant attention from authorities. In early 2011, governments decided to expedite digitalization efforts to create more inclusive and developed economies, with support from non-governmental organizations (NGOs) and the global community. Since then, digital financial services have rapidly proliferated across the continent's economies.

Fintech providers have become key players in the financial landscape, significantly contributing to the implementation of digital financial services across nations. Research has produced various definitions of fintech. For instance, Schreiber and Vrielink (2019) defined fintech as technology-driven financial innovation. Additionally, Edward Iluba and Jackson Phiri (2021) characterized fintech providers as a network of businesses leveraging technology to transform traditional banking by facilitating mobile financial transactions. Similarly, Arner et al. (2015) described fintech providers as technology-enabled companies offering financial services typically associated with banks. The research indicates that fintech companies generally utilize digital platforms to facilitate payments and money transfers without necessitating bank accounts. There are positive aspects to working with Fintech companies. Even while federally insured banks can offer their clients the same financial services at lower prices than Fintech providers, there are still reasons

why people might choose to use Fintech companies. For example, Fintech companies can offer smoother, faster financial services, which makes it simpler for low-income people to handle their daily financial responsibilities. Secondly, because Fintech companies do not handle deposits like banks do, they will likely be subject to fewer regulations. This will allow them to concentrate on enhancing their financial technology and intermediation capabilities while cutting costs wherever feasible to better serve their clients. Moreover, compared to banks and other lending institutions, certain Fintech companies are better able to give small loans or emergency funds in real time to people with low or lower incomes. This is due to the fact that conventional banks and other lending institutions are not required to give emergency funds to anyone. All requests for emergency funding at these institutions must go through the standard credit risk assessment procedure, which could be too much time consuming for those in need of immediate emergency funds. This puts some Fintech companies in a stronger position to offer middle-class and lower-class people emergency funds in small quantities at higher interest rates. Additionally, through the usage of online platforms, fintech companies can dramatically boost customer satisfaction by making their services accessible from any location where a consumer or user has Internet connection. This makes it possible for Fintech companies to assist clients in completing financial transactions without needing to visit a banking hall. Some studies suggest that fintech companies are emerging in the financial services sector either to compete with banks or to provide clients with enhanced services. Notably, the popularity of fintech products and services related to lending and payments has intensified competition, as they are often perceived as more user-friendly and quicker compared to the bureaucratic processes of traditional financial institutions. This competition has been beneficial, leading to a higher number of mobile accounts compared to traditional ones in certain countries. A distinguishing feature of fintech companies is their ability to expand and integrate financial services through technology, giving them a competitive advantage. Research by McKinsey (2018) revealed that substantial transactions, exceeding \$1.9 trillion, were conducted through digital mobile platforms in 2017. Bill Gates articulated the need for banking concepts in 1994, highlighting their importance beyond traditional banking institutions. Nonetheless, Conner's (1991) study emphasized

that each competitor may possess unique skills not shared by others. As such, it is crucial for banks to foster technological innovation to address the challenges posed by fintech.

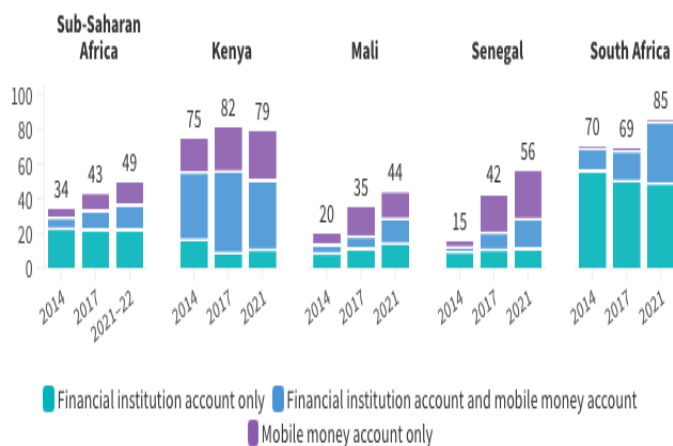
Another significant impact of digital finance in Africa is financial inclusion. The World Bank (2018) defines financial inclusion as the ability for individuals and businesses to access practical and affordable financial products and services that meet their needs, including transactions, payments, savings, credit, and insurance, delivered ethically and sustainably. Research findings indicate that globally, 1.4 billion individuals are financially excluded, relying on informal lenders for credit due to a lack of access to financial products and services, as well as reliable systems for sending or saving money. However, the expansion of digital financial services has contributed to reducing this gap. According to the GSMA (2018) report, over 395.7 million people in Sub-Saharan Africa have opened digital financial accounts, which represents 45.6% of all digital financial accounts worldwide, with South Asia following at 33.2%, and the East and Pacific region at 11%. Studies indicate that financial inclusion benefits society as a whole. Countries investing in financial inclusion adopt a successful strategy to alleviate poverty, reduce inequality, foster sustainable communities, improve educational outcomes, create jobs, ensure economic stability, and stimulate growth while safeguarding the integrity of the financial system. Notably, prior research has shown that financial inclusion can accelerate economic growth. For instance, Kim et al. (2017) analyzed data from 55 Organization of Islamic Countries, revealing a strong correlation between economic growth and financial inclusion. Similarly, studies conducted by Menyelim et al. (2021) and Adedokun and Ağa (2021) demonstrated the positive impact of financial inclusion on economic growth in various Sub-Saharan African countries. The GSMA (2024) report, titled "State of the Industry on Mobile Money," found that by 2023, over 856 million Africans had opened mobile money accounts, completing 62 billion transactions totaling \$919 billion

Additionally, it is important to note that over the years, digital finance in Africa has played a role in reducing poverty. Research by Buku and Meredith (2013) indicated that between 2007 and 2012, 15.2 million individuals utilized mobile money, with electronic money transactions amounting to \$1.4 billion,

significantly aiding poverty reduction by providing access to various services such as bill payments, purchasing goods and services, securing loans, and facilitating international money transfers. It can be hypothesized that financial inclusion and poverty are closely interconnected within the digital financial system. Demirgüç-Kunt (2012) argued that investing in education and inclusive initiatives can empower individuals to escape poverty and contribute to economic growth. Bruhn and Love (2014) highlighted that the rise of digital financial services has enabled women, rural households, and historically marginalized groups to increase their incomes and enhance their employment prospects. Mobile money accounts have emerged as vital enablers for women in Sub-Saharan Africa. According to studies by the World Bank (2022) and Brookings (2024), women account holders are transitioning from traditional, non-digital bank accounts to mobile money accounts, often closing their financial institution accounts in favor of these more accessible options. There has been a noticeable increase in women's financial account ownership rates in developing African nations since 2017, primarily due to a surge in mobile money account usage.

Although this research offers insightful information about how digital financial services affects financial inclusion in Kenya and contribute to improve the lives of populations, there are a few areas that need more investigation. Firstly, we might assess how more research on the role of digital financial services plays in risk management and financial resilience can be done in the future. Additionally, it should be noted to highlight that, policymakers and practitioners would benefit much from knowing the elements that allow people to successfully use digital financial services for financial security. Another point to consider is the long-term impacts of digital financial services adoption on livelihoods and revenue production which also require further investigation. Moreover, it should be noted to examine the viability of digital financial services and how it facilitated revenue and generate ventures as well as their role in reducing poverty would also be part of this. Future studies conducted might also look into the possible advantages and disadvantages of implementing cutting-edge digital financial technology, including blockchain and virtual currencies, in order to advance financial inclusion in Kenya.

#### 4.1. Account ownership growth in SSA



Source: Global finindex (2021)

Between 2014 and 2021 this table show the account ownership growth, financial institution account and mobile money account in Sub Sahara Africa and East Africa. We can see an example of Mali financial institution account which is less than others nations because of a mix of economic, technological and institutional factors. Moreover, we can highlight that, between 2017 and 2021 in Kenya the financial institution account and mobile money account was impacted by economic disruption from the pandemic led to widespread job losses and business closures, especially in the informal sector. Many people lost income and were unable to maintain active bank or mobile money accounts. Some accounts became dormant or were closed due to inactivity, contributing to the statistical decline. For instance, financial institutions and mobile money providers often deactivate or remove inactive accounts after a certain period. In 2017, Kenya had already achieved high levels of financial inclusion. The 82% figure was near market saturation, meaning most of the “easily reachable” population already had access. In Senegal, we can observe there is a significant evolution of financial institution account, financial institution account and mobile money account as well as mobile money account only covering the period from 2014 to 2021 due to the expansion of 3G and 4G networks, especially in rural areas, allowed more people to access mobile financial services. This infrastructure enabled even those without traditional banking access to use financial tools via their phones. Providers like Orange Money, Wave, and Free Money played a critical role because they offered accessible, low-cost, and user-friendly platforms to send, receive, and store money.

Furthermore, the Senegalese government and the Central Bank of West African States (BCEAO) prioritized financial inclusion such as Reforms and regulations made it easier for mobile network operators and fintech startups to enter the financial services space. Banks started partnering with mobile money platforms to reach new customer segments which helped people transition from mobile money-only to linked financial institution accounts. Many Senegalese had no access to traditional banking due to high fees, distance, or lack of documentation. During 2014 and 2017, South Africa saw a slight decline in the number of people with an account at a financial institution, a combined bank and mobile money account, or a mobile money account only. The main reasons for this decline include, among other things, a period of slow growth, marked by job losses. Many low-income people saw their bank accounts become inactive or closed due to insufficient funds or a lack of activity. Limited adoption of mobile money. Unlike countries like Kenya, South Africa has been slow to develop mobile money services. Products like M-Pesa have failed to gain traction, mainly due to regulatory barriers and a lack of consumer interest. After 2017, the situation improved thanks to the rise of digital banks and fintech (TymeBank or Bank Zero), which made it possible to open bank accounts quickly and at lower costs, facilitating access for excluded populations. The South African government increased the use of bank accounts to distribute social assistance, encouraging more citizens to open and actively use their accounts. The health crisis also accelerated the transition to digital payments, as populations sought safer alternatives to receive aid, send money, or make purchases. To conclude, we can observe that Sub Saharan African countries such as Mali and Senegal have recorded significant growth in banking and fintech presence since 2014 unlike Kenya and South Africa which despite being among the nations with the highest banking rates in Africa, are facing stagnation due to high unemployment rate or the impact of the COVID 19 pandemic crisis, even if it has accelerated the transition toward digital payments.

#### **4.1.1. Implementation and Growth of Digital Finance**

Digital financial services began attracting attention all around the world with the evolution ebbed in particular out of a period of significant expansion during the 1980s and 1990s from basic banking functions such as keeping money safely deposited online or at automatic teller machine, paying bills electronically pulling out large debt cards and so on for all sorts of digital

activities, instead at first handled by machines but then increasingly by dial-up computer.

The implication and growth of digital financial services worldwide has been a gigantic success, nowhere more so than in Africa where people were excluded from the normal banking structure. According to a World Bank report (2021) have shown that, 76% of people in the world own a bank or mobile money account. The wider application and acceptance of digital finance worldwide is now being facilitated by many elements including internet access; widespread mobile phone use; regulatory convergence to protect a safer environment (Security and Integrity); data sharing among people who contribute to finances such as Fintech businesses, banks, insurance companies etc. as well as businesses independently providing services for their own interests (Third Party Service Provider); finally plenty of money from investors is now supporting this process. Although digital financial services are being taken up by more people, there have been the challenges of cybersecurity, regulatory issues, or elevation in digital illiteracy. In addition, previous studies have showed that young Africans-who are skilled with technology and use mobile phones extensively-constitute the largest group driving expansion of financial products emerging from digital services across Africa.

Africa has benefited greatly from the introduction of digital financial services. No longer just a way to send and receive money with your cell phone, this has developed its own eco-system of financial services now including investment and credit as well as insurance--or savings facilities Any gap between those who use traditional banking services and those who do not have access to formal financial services is quickly filling up. Equity is produced by digital finance with various services such as mobile money for savings and payments and even loans that makes it accessible to everyone regardless of social class; heretofore excluded groups take an active part in what was formerly an exclusive game. For instance, the success of digital finance in Mozambique and a previous study suggested by are as follows: When financing services go digital, the value of what is provided jumps If financing services are not provided in digital format, however far they to extend financial services to fall; one indication comes from its facilitation for poor people to find and use such

financial services. With this year's deep interaction with third-party partners, the micro-lending sector has accomplished good results indeed in major economies like Egypt, Nigeria, South Africa and Kenya. For according to the reports of The European Bank for Reconstruction and Development (2024), which have made an impact in this field and look at what they show: The top one spot belongs to countries providing digital financial services Nigeria, Kenya, and South Africa, despite having only 7% of Africa's financial technology firms make them home-based. They also receive 80% of all funding for fintech-related projects. The largest nation market is Nigeria, which accounts for 28% of the firms which were examined. The second place ran out to South Africa at 20%, Kenya and Egypt each took 16%, respectively. Furthermore, As the European Investment Bank (2024) report indicate that there is more than two-thirds of worldwide volume as well as value in mobile financial transactions has been transacted in Africa.

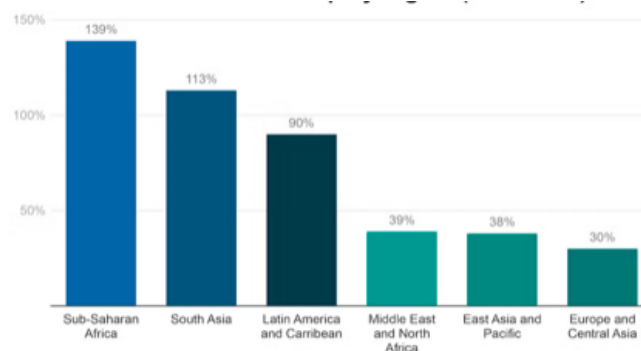
The introduction of digital finance in Africa has many contributors. Take mobile banking services such as M-Pesa, which has connected tens of millions with a broader range of financial services than they ever had access to before. Also complementary to this is mobile money services which have achieved economies of scale- led by the cell phone duopoly which ensures that large numbers consume it. In addition, a strategic alliance between key service providers such as banks, fintech companies and telecommunications operators has brought greater access to digital financial services. And regulatory support and adjustments made to government policies and laws originating from countries such as Kenya by the Central Bank of Kenya (CBK) have helped create a climate conducive for the innovation of digital finance. Furthermore, consumer adoption of digital transactions has developed over time, trust built on daily difference accumulation has been assimilated into society. And good regulation allows people to use credit. For instance, mobile loans and digital payment solutions have benefited small and medium-sized enterprises (SMEs), while increased government revenue and improved the tax system. In addition, transaction costs are decreasing. Digital financial services (DFS) are more straightforward than traditional banking and make it easier to transact online. For example, in comparison to bricks-and-mortar banks, DFS speed up the

process and cut costs for withdrawing funds from automatic teller machine (ATM) or using point-of-sale devices. Despite its accomplishments, digital finance still faces some challenges and limits in Africa. For instance, there is the threat of fraud and digital scams. In the future the focus will be on deepening usage and ensuring that instead of just widening access digital financial services become broad and at once also safe, fair taking together in harmony with one another. To realize this, one would certainly need improved digital literacy plus more stringent consumer protections. Political changes to allow for innovation that sacrifices neither security nor common sense need occur. From this point of view Africa's experiences show how technology in sync with local needs, good public policy and regulation may together create something distinctly more open than any traditional financial system and more responsive than in the past.

Despite these achievements, digital finance still confronts some challenges and limitations in African economies. Among these challenges, we can highlight the fraud and digital scams that are an ongoing concern. Moreover, in the future, the emphasis will be on deepening usage and making sure that digital financial services are safe, equitable, and inclusive rather than just expanding access.

We can assume that, this requires improved digital literacy, more robust consumer safeguards, and more intelligent rules that permit innovation without sacrificing security. Africa's experience demonstrates how technology, in conjunction with local requirements and wise policy, may provide a financial system that is more accessible and responsive than in the past.

#### 4.2. Growth in account ownership



Source: Global Findex 2021

As a result of the rapid adoption of digital financial services, particularly mobile money, which has been revolutionary, particularly in nations like Mali, Senegal, and Côte d'Ivoire, Sub-Saharan Africa saw the largest increase in account ownership, with a remarkable 139%. Mobile money has successfully reached low-income, rural, and unbanked people populations that have historically been excluded out of the conventional banking system. By a 113% growth, South Asia comes in second. Government-led financial inclusion programs like India's Jan Dhan Yojana program, which encouraged millions of people to register bank accounts with no fees, have been a major factor in this expansion. This quick growth has also been facilitated by the integration of digital payment platforms and biometric identification systems, such as Aadhaar. Due in part to the region rapid transition to fintech and digital banking, Latin America and the Caribbean come in third with 90% growth. This trend was accelerated by the pandemic, which encouraged more people to use digital accounts for remote transactions and social transfers. East Asia and the Pacific and the Middle East and North Africa experienced more moderate increase at the lower end of the range (39% and 38%, respectively). Obstacles include political unrest, a lack of digital infrastructure, and gender disparities have impeded development. Many East Asian and Pacific nations had quite high account ownership percentages prior to 2017, so even with further advancements, their growth rate seems lower in comparison. Lastly, the least amount of growth (30%) was observed in Europe and Central Asia. This is probably due to the fact that several of these nations had already attained high account ownership rates before 2017, which naturally reduced the potential for further expansion.

#### **4.1.2. SWOT Analysis in African economies**

This strategic tool aims to analyze the internal or external factors particularly the strengths, weaknesses, external opportunities and threats that might affect digital financial service on African economies.

##### **◆ Strengths**

The strength is defined as any business particularity where an organization or a system excels and has unique abilities from which they take the most advantage. In our research study we can highlight its operational efficiency leading to the financial inclusion Digital finance is characterized as a catalyst for inclusiveness where there

are an estimated 400 million of people financially excluded. The World Bank (2024) report indicates that Nigeria has a higher rate of financial inclusion than the regional average of 40%, with 45% of those over 15 having an account with a financial institution. Moreover, we can also emphasize on the impact on economic participation through these affordable services and easy to access. With its wide range of innovative services including loans, digital financial services have contributed to help people living in poverty to have access to credit and therefore be actively involved in economy. For instance, according to the Consultative Group to Assist the Poor (2019) report show that approximatively 27% of Kenyan had taken digital loans for their needs.

➤ **Weaknesses**

The weaknesses are defined as internal challenges where an organization or a system has a disadvantage that might prevent it from achieving its objectives. In our research study, we can firstly highlight the infrastructure barriers in some nations in Africa, where rural areas face a lack of network. Secondly, we can point out the literacy barriers face by certain group that might discourage from the use of digital services. However, various efforts have been made by governments, financial institutions and fintech compaignies to support digital financial service. With this approach, people who previously had difficulties understanding digital finance concepts can have a better knowledge about this system framework. Finally, the regulatory gaps between nations are another point to highlight that might impact digital finance in Africa. For instance, recently in Mali, government has imposed a taxation of 10% through each digital transaction

➤ **Opportunities**

The opportunities are defined as chances where an organization or a system can benefit in order. In our study, we can highlight the sector expansion potential. According to the Global Fintech (2020) report show that Africa is the fastest growing fintech market, a proof of the sector enormous potential.

Another point to consider is the emerging market in countries such as Angola, Algeria or Democratic Republic of Congo which are showing great signs of digital financial service adoption. Moreover, we can highlight initiatives for financial

inclusion support by government and private sector which can enhance the development of digital financial services.

Moreover, studies found have shown the ability of digital financial services to provide financial service to population in remote areas financially underserved.

#### ➤ **Threats**

The threats are defined as factors that might impacted an organization or a system efficiency. Digital financial services in Africa face threats such as cybersecurity which can affected user trust. In terms of digital finance, we can define cybersecurity as a concept of safeguarding the digital services and online transactions from adversity and hazard such as information disclosure, theft or disruption of services it provides. In other word, according to Chitimira and Ncube (2021) studies refers it to measure that are employed by bank and others enforcement authorities to safeguard and prevent incident of cybercrimes. It should be noted that the most cyber security threats affecting digital finance include malware, spoofing, unencrypted data. Another key point to consider is the high competition in the market with numerous players which can lead to market saturation and reduce profitability. Moreover, the economic uncertainty with challenges such as inflation, recessions and currency fluctuations might affect digital financial services.

## **4.2. Digital Finance in Kenya**

The Kenyan government has made financial inclusion a top goal in recent years. In the past, those who were economically disadvantaged may employ passengers as short-term money couriers to move money between buses and trains. But it appeared that this approach was no longer particularly reliable or safe. In an effort to overcome these obstacles, a number of actors, including governments and fintech companies, started investigating alternative substitutions that use technology to provide financial services solely through technology. This would make financial services more effective and sensitive to the needs of all people. Following this change, mobile money platforms including the flagship service that is currently used by millions of people began to be extensively introduced. This financial innovation has been very popular from this perspective. Kenya has successfully implemented digital financial services by establishing itself as

a leading global player with significant development potential in this sector. This is due to the country's younger population, which is well-versed in digital technology and eager to embrace the newest innovations. Approximately 84% of Kenyans were utilizing digital financial services by 2022, according to previously published study. Following Safaricom and Vodacom's joint venture, M-Pesa was introduced as the leading telecom provider in East Africa. M-PESA is a banking service where customers can deposit and withdraw money from a network of agents that includes airtime resellers and retail outlets acting as banking agents. What began as a pilot project, partly funded by the British foundation, quickly became a major innovation. In just a few years, M-Pesa has become a pillar of the Kenyan economy, facilitating not only money transfers between individuals, but also payments for goods and services, bill settlements, and access to credit and savings, thanks to complementary services such as M-Shwari and KCB M-Pesa. Over time, the platform has expanded regionally to Tanzania, Mozambique, the Democratic Republic of Congo, Ghana, and more recently, other regions of sub-Saharan Africa. At the same time, M-Pesa has modernized to respond to technological developments: integration of mobile applications, interoperability with other digital financial services, opening up to e-commerce, and implementing solutions for small and medium enterprise.

In 2025, nearly two decades after its creation, M-Pesa embodies one of the greatest technological innovation successes in Africa. Its evolution illustrates how a local response to a structural need through access to financial services has been able to sustainably transform economic and social practices, while inspiring similar models around the world. The near-monopolistic providers of the M-PESA service are sometimes criticized for the high cost that the service imposes on its often-poor users. According to previous research conducted by The Bill and Melinda Gates (2013) Foundation warned that a lack of competition could drive up prices for customers of mobile money services and used M-PESA in Kenya as a negative example. Moreover, according to the report, a transfer of \$1.50 cost \$0.30 at the time, while the same provider charged only a tenth of this in neighboring Tanzania, where it was exposed to more competition. Additionally, study conducted by USAID found that poor uneducated customers, who often had bad vision, were a target of unfair practices within M-PESA. They had expensive subscriptions for ring-tones and similar unnecessary services pushed on them, with opaque pricing, and thus did not understand

why their M-PESA deposits depleted so quickly. If they did, they were often unable to unsubscribe from those services without help. The authors concluded that it is not the marginalized people in Kenya who benefit from M-PESA, but mostly Safaricom. A similar conclusion was reached by development economist Alan Gibson (2016) in a study. He stated that credit to business did not improve due to M-PESA and that credit to the agricultural sector even declined. He concluded in his otherwise very friendly survey that the financial sector benefitted handsomely from the expansion of M-PESA, while the living conditions of the people were not noticeably improved. Milford Bateman et al. even conclude that M-PESA's expansion resulted in holding back economic development in Kenya. They diagnose serious weaknesses in the much-cited paper by Suri and Jack, which had found positive effects on poverty, as M-PESA enabled female clients to move out of subsistence agriculture into micro-enterprise or small-scale trading activities. Alleged weaknesses include a failure to incorporate business failures and crowding out of competitors in the analysis. Bateman et al. call M-Pesa an extractive activity, by which large profits are created from taxing small-scale payments, which would be free if cash was used instead. As a large part of these profits are sent abroad to foreign shareholders of Safaricom, local spending power and demand are reduced, and with it the development potential for local enterprise

For Kenyan agents based to operate this system, this was a radical break from traditional money management practices. Since then, a wide range of financial services have been introduced to promote financial inclusivity and are currently accessible to the large number of unbanked people in the country. Previous studies on M-Pesa have shown that over 60 million people use it monthly. By connecting them to more than 600,000 agents and 60,000 developers, they create an ecosystem that benefits more than 950,000 merchants and 5 million enterprises. Through international agreements, M-PESA consumers and companies may send and receive money as well as conduct business payments domestically or abroad. Additionally, M-PESA is credited to some nations' attempts to increase formal financial inclusion by as much as 60%, with up to 84% of their populations now having formal financial inclusion. Thus, more than 60 million consumers and 5 million enterprises now have reasonably priced access to dependable and high-quality financial services because to this financial innovation. In the eight nations that M-PESA has

visited since its founding on March 6, 2007, they include Ethiopia, Egypt, Ghana, Tanzania, the Democratic Republic of the Congo, Mozambique, and Lesotho. In addition, after 10 years on the market, the M-Pesa platform has undergone a significant redesign, according the 2017 study by Ann Njoki Kingiri and Xiolan Fu. In addition to enabling approximately 46.6 million adult Kenyans with mobile accounts, it has added several capabilities. Their study's conclusions demonstrate the extraordinary worth of transactions made on this platform. For instance, KSh 5.29 trillion, or over 85% of the nation's GDP, has been exchanged by March 2016. The reasons for M-Pesa's success have been the subject of several studies.

Thus, more than 60 million consumers and 5 million enterprises now have reasonably priced access to dependable and high-quality financial services because to this financial innovation. In the eight nations that M-PESA has visited since its founding on March 6, 2007, they include Ethiopia, Egypt, Ghana, Tanzania, the Democratic Republic of the Congo, Mozambique, and Lesotho. In addition, after 10 years on the market, the M-Pesa platform has undergone a significant redesign, according the 2017 study by Ann Njoki Kingiri and Xiolan Fu. In addition to enabling approximately 46.6 million adult Kenyans with mobile accounts, it has added several capabilities. Their study's conclusions demonstrate the extraordinary worth of transactions made on this platform. For instance, KSh 5.29 trillion, or over 85% of the nation's GDP, has been exchanged by March 2016. The reasons for M-Pesa's success have been the subject of several studies.

Firstly, they primarily discuss demand-side financial characteristics and elements pertaining to technology providers, particularly entrepreneurship and the industrial environment, in light of macroeconomic consequences. The conventional method by which Kenyans handled financial transactions was totally upended by M-Pesa platforms, which allowed users to conduct money transactions using cellphones without the need to maintain a bank account.

This creative idea swiftly won over both urban and rural populations by addressing the problems of accessibility and convenience. The successful adoption of M-Pesa can be attributed to several factors. First, research by Foster

and Heeks (2013) has demonstrated that M-Pesa meets the needs of development and financial inclusion.

Secondly, especially at the macro level, this financial innovation focused on the client and technology provider sides. Ultimately, negative customer backgrounds, such as not belonging to the population with official banking access, have affected M-Pesa's successful pilot trial and drive-to-market.

On top of that, we ought to highlight the wider implications of digital banking. These technologies help reduce poverty and inequality since they not only provide financial services but also advance a nation's overall economic growth.

Even if technology advancements have functional ups and downs, we may conclude that they are good for economic growth based on some prior study and certain debate conclusions. This is due to the fact that fintech companies are always producing new goods as innovation progresses, which will ultimately lead to economic growth. Tufano (1995) highlighted in his research that the entire economy is propelled by digital financial innovation, which leads to economic growth due to the availability of cash through quick income flows.

Both people and businesses have been able to close these gaps because to the availability of digital financial services, such as loans. For instance, Kenya's high percentage of phone owners and the swift transition to digital mobile M-Pesa projects have contributed to rapid capital accumulation, modest savings, and the growth of microenterprises, which are generally regarded as the foundation of any government's industrial and economic development. In this regard, the GSMA (2019) research indicated that digital financial services contribute 47% of Kenya's GDP. Furthermore, prior studies have demonstrated a favorable correlation between financial inclusion and economic growth.

The association is considerably more pronounced for low-income and generally under-included nations. The findings also aligned with a study by Khan et al. (2022) that suggested financial inclusion has a major positive impact on economic growth, poverty, sustainability, and financial efficiency for G20 countries using the generalized method of moments and autoregressive

distributed lag. Nevertheless, the models that served as the foundation for this study overlooked any institutional limitations.

The degree to which financial inclusion and economic development are linked may vary among nations with various institutional frameworks because they may aim for varying degrees of financial inclusion. The biggest shift in our nation's financial environment has been brought about by the growth of digital financial services. Additionally, a number of conventional banking services, such as credit cards, have been updated and replaced by digital ones. The number of competitors has significantly increased as a result. In this regard, for example, the capacity to conduct transactions across banks and the internet, as well as the ability to make payments via the Paybill and PesaLink platforms, have made services previously unavailable in the nation possible.

For example, the M-Shwari platform provides its customers with immediate phone access to both loan and saving features. These businesses have used data analytics and artificial intelligence to better understand customer preferences and tailor their offerings to those demands. This not only improves a business's chances of success, but it may also lower the cost of customizing services to boost sales and aid in product selection.

The swift growth of digital financial services has drawn the attention of Kenyan regulators, who are not taking it lightly. They also intend to establish a framework that would allow for the maximum level of innovation while ensuring client safety. By establishing guidelines for mobile money and other activities that comply with prudential standards, the Central Bank of Kenya has been instrumental in overseeing the fintech industry.

However, there are still issues with data privacy, fraud prevention, cyberspace security, and the pressing need for thorough consumer education to reduce the hazards connected to digital financial services. Future possibilities for digital finance in Kenya are promising. We have only just started to consider what digital financial services would entail when individuals eventually become used to not requiring any physical form for transactions between themselves, yet mobile money services are predicted to continue growing quickly. For

instance, implementing blockchain technology would increase financial transaction security and transparency. Additionally, as the number of people using smartphones and the Internet continues to rise, digital money is probably going to reach many more people who aren't now served. so further reducing the gap between those who have access to banking and those who do not.

In conclusion, the emergence of digital financial services in Kenya has transformed the financial industry and given many people and companies a voice. Time and again, it has been a driving factor for innovation and economic resilience in development. As fintech develops, regulators, service providers, and customers will need to work together to resolve a variety of problems that may come up. The only way for residents of every Kenyan area to experience the advantages of digital money is if this mission is completed.

4.1. Digital financial service in Kenya

Year	Number of digital financial service providers	Total value of transactions (Ksh billion)	Number of registered users ( million)
2007	1	4.4	1.4
2010	4	76.7	11.2
2015	12	252.1	23.6
2020	31	561.2	40.5
2023	32	1151.3	48

Source: Central Bank of Kenya (CBK) and Communications Authority of Kenya. (CA)

On this table, we can observe that from 2007 to 2023 the number of digital financial services providers in Kenya has considerably increase which has led to an increase in the number of registered users as well as the total number of transactions carried out through this financial platform. A mix of social, technological, economic, and regulatory variables can account for these increases. First of all, it should be noted to highlight the successful launched of M-Pesa by Safaricom in 2007 as a catalyst. By demonstrating that a sizable population that had previously been financially excluded from traditional banks could receive basic financial services over the phone, this financial invention completely changed the financial industry. Due to M-Pesa quick success, other businesses and startups have been inspired to develop comparable or

supplementary services including bill payment, insurance, savings, and loans. Secondly, we can also highlight the high penetration rate of mobile services. The majority of Kenyans hold a cell phone, which has made it easier to access digital financial services. Thirdly, the growing interest in financial inclusion is also an aspect that should not be overlooked. The fact that a sizable portion of Kenyans lacked access to traditional banks, the introduction of digital financial services that provide quick, easy, and affordable alternatives even in rural areas has contributed in reducing this gap. The backing of government and regulatory policies is an additional factor to take into account. To promote the digitalization of financial services, for instance, the government and the Central Bank of Kenya have put policies into place. Moreover, Kenya is frequently called the "Silicon Savannah" because of its flourishing entrepreneurial environment, which attracted numerous foreign investors who have invested fintech because of their potential for expansion. Lastly, we can draw attention to the increasing societal acceptance of these financial services, which play a bigger role in people everyday lives. In conclusion, a combination of technology advancements, a favorable investment climate, legislative support, societal requirements, and the achievements of trailblazing companies like M-Pesa has led to the growth of digital financial services in Kenya from 2007 to 2023. The country's financial inclusion and digital transaction frequency have increased significantly as a result of this dynamic.

#### **4.2.1. Implementation and Major Actor of Digital Finance**

The successful implementation of digital finance in Africa is characterized by several key actors and strategies that address the continent unique challenges and opportunities. These strategies include regulatory frameworks, infrastructure development, and collaborative partnerships that support an environment reliable to digital financial services. Fintech companies through mobile money innovations, and regulatory backing have all played a significant role in the transformation of digital finance and financial inclusion in Kenya.

Firstly, it is important to emphasize on the major place occupied by governments. In the late 1990s and early 2000s, the Kenyan government began to recognize the necessity to integrate digital financial service for financial

inclusion and as a catalyst for economic development. Following this recognition, they have established clear policies, to ensure that consumers are protected. Moreover, the Central Bank of Kenya and the Communications Authorities of Kenya have also played a crucial role in regulating digital finance. They have set in place rules including a regulatory sandbox and mobile money guidelines to encourage digital financial service innovation (Ndung'u, 2019).

Additionally, partnerships between fintech companies and traditional banks have also contributed to the effectiveness of digital financial service in Kenya. For instance, traditional banks, such as Equity Bank, and Cooperative Bank, have developed their own digital platforms or partnered with fintech companies to integrate digital financial services into their operations. These collaborations not only help banks reach a wider customer base but also allow them to provide more streamlined and efficient services. While, Fintech companies such as Tala or Jumo brand are offering more innovative solutions for underserved populations. This synergy between banks and fintech firms resulted in more inclusive financial environment, enabling greater access to financial services for individuals and small businesses. Moreover, many development institutions have also contributed to digital financial service programs in Kenya such as support from the World Bank, International Finance Corporation (IFC) and also Bill and Melinda gates foundation. On top of that, fintech companies have become important participants in the financial ecosystem by providing creative solutions and broadening the scope of digital financial services that customers may access. These businesses offer digital loan, insurance, savings, and investing platforms, among other services. Furthermore, by establishing rules and regulations to safeguard consumers and encourage competition, regulatory organizations like the Communications Authority of Kenya and the Central Bank of Kenya have been instrumental in fostering an atmosphere that supports digital financial services.

According to earlier research, fintech companies and mobile network providers that offer a variety of financial services, including digital wallets, online payment systems, and mobile money, dominate the digital financial services market in Sub-Saharan Africa. MTN Mobile Money, M-Pesa, Orange Money, and Airtel Money are significant players in the market. One of the most well-known mobile money systems in Africa, M-Pesa was introduced in Kenya

in 2007 by Safaricom and Vodafone. Customers may use their mobile devices to pay their bills, make deposits, withdrawals, money transfers, and apply for credit and insurance. Because of its success in Kenya, M-Pesa is now a model for similar services across Africa.

Furthermore, it should be mentioned that MTN Mobile Money, operated by the MTN Group, is another well-known supplier of digital financial services with a substantial presence in countries like Ghana, Uganda, and Côte d'Ivoire. MTN Mobile Money offers a wide range of financial services, including bill payment, savings options, and money transfers, and has over 46 million active customers in Africa. Other significant players include Orange Money and Airtel Money, who use their extensive phone networks to provide digital banking services throughout several African countries. Airtel Money is accessible in 14 African countries, but Orange Money mostly serves countries in Francophone Africa, such as Côte d'Ivoire, Mali, and Senegal.

Digital banking in Kenya has grown promisingly, but there are still a number of obstacles that might prevent it from reaching its full potential. Consumers and organizations are at serious danger from cybersecurity, data privacy, and regulatory compliance issues. It should be mentioned that two major obstacles to the broad use of digital financial services are poor internet connectivity and restricted access to energy. Therefore, more people and companies may benefit from a formal financial system if investments are made in telecommunications infrastructure, such as increasing internet access and enhancing mobile network coverage.

Moreover, inequalities persist even if digital banking has greatly increased financial inclusion. Cultural issues or a lack of digital literacy may make it difficult for marginalized populations, such as women and the elderly, to utilize digital banking instruments.

However, the difficulties also offer chances for development and advancement. Through the utilization of collaborations among conventional financial institutions, fintech firms, and governmental organizations, Kenya may cultivate an environment that stimulates creativity while tackling security and regulatory issues. To guarantee that all Kenyans can take advantage of the

developments in digital finance, it will be essential to maintain investments in technology infrastructure and digital literacy initiatives.

The impact of digital finance on economic growth in Kenya is a multifaceted phenomenon that enhances financial inclusion, spurs innovation, and presents both challenges and opportunities for the future. As the landscape continues to evolve, the collective efforts of all stakeholders in the financial ecosystem will be essential in harnessing the full potential of digital finance for sustainable economic development.

Looking ahead, the future of digital finance in Kenya appears promising. As fintech companies and traditional banks deepen their collaborations, we can expect the emergence of more tailored financial products that address the unique challenges faced by various demographics. It is important to highlight that, as technology continues to advance, innovations such as blockchain, artificial intelligence, and data analytics are likely to streamline operations, enhance security, and improve user experiences within the digital finance space. This could lead to more efficient cross-border transactions, reduced costs, and increased trust among consumers.

In conclusion, while Kenya has made tremendous strides in digital finance, the journey is far from over. Stakeholders must remain agile and collaborative, navigating the complexities of this dynamic environment. By doing so, Kenya can solidify its position as a leader in digital finance, setting a benchmark for other nations in Africa and beyond.

#### 4.2. Digital financial services usage in Kenya

Indicator	2015	2020
M-PESA Users (millions)	24	38
Percentage of population using M- PESA	53%	79%
M-Shwari Users (millions)	12	18
M-KOPA Users (millions)	-	10

Source: Safaricom, M-KOPA, and internal data analysis

On this table, we can observe that from the period of 2015 to 2020 the number of M-Pesa users has significantly increase. The percentage of individuals using this platform has almost doubled from 53% to 79%. There are several reasons for this growth, including: We can start by pointing out the growing trend of mobile phone penetration. From 2015 to 2020, mobile phone access, particularly low-cost smartphones, increased quickly throughout Kenya, enabling more individuals, including those living in remote regions, to utilize digital financial services like M-Pesa. Secondly, we can draw attention to Safaricom's network expansion. Even in distant areas, the corporation has made significant investments to increase its 3G and 4G coverage. Thirdly, we can highlight the Central Bank of Kenya and the Kenyan government financial inclusion programs. M-Pesa meets this need and helps close this disparity by offering affordable, easily accessible financial services to those who have traditionally been kept out of the traditional banking system. Another factor to take into account is the solid reputation M-Pesa has established with consumers for providing efficient, dependable, and secure services, which has prompted more individuals to use the platform. In fact, M-Pesa had been considered to be quicker, easier to use, and safer for daily use than banks. Finally, the Central Bank of Kenya's guidelines waiving fees for minor M-Pesa transactions exacerbated the rapid transition to cashless payments that occurred in the

early months of the pandemic. As a result, the number of users and transactions increased significantly in 2020. Other platforms, such as M-Shwari, have shown moderate user growth in comparison to M-Pesa, growing from 12 to 18 million users between 2015 and 2020, mainly because of the nature of the service. M-Shwari concentrates on microcredit and savings, two services that not all consumers frequently utilize. As a result, usage is occasionally less frequent and restricted to particular times, such as the end of the month. Moreover, we can observe that certain criteria form the basis of eligibility requirements. For instance, many users are ineligible, particularly those who are young or have low transaction volumes. Additionally, we highlight other similar solutions, such as Tala or Branch platform, which have offered competitive alternatives that are occasionally more attractive or more effectively targeted. Finally, we can observe that some rural communities or age groups are reluctant to depend on debt, even if it is just temporary. Compared to M-Pesa, this platform's growth has been slower, which can be explained by all of those factors.

#### **4.2.2. Pestel Analysis**

##### **➤ Political**

Concerning the political factors that influence digital financial system, we might highlight firstly, that the Kenyan government has been supportive in the development of digital financial service, through initiatives. These initiatives in partnership with the Central Bank of Kenya include regulations such as the national payments strategies for digital credit providers that aims at modernizing the country payment systems making it more secure, faster and efficient. According to his study, Blechman (2020) state that through regulatory sandboxes, the Central Bank of Kenya (CBK) promoted innovation and made it possible for fintech companies to test innovative financial products. Moreover, the government support programs for the “Kenya Vision 2030” project, which highlight financial inclusion as a driver for economic growth, should also be taken into account. (World Bank, 2021). However, some regulations made by the authorities might negatively impact digital financial service such as recently when they voted a law to increase government taxation.

Another key factor to consider that might impact the digital financial system is the political stability in the country which plays an essential role. It attracts foreign

investments in the country which can therefore contributed to the development of the sector as well as the country.

➤ **Economics**

Concerning the economics factors that influence digital financial system, we might highlight firstly the economics aspect of the country which is the largest in East Africa through its regional transportation and regional hub. Secondly, we can highlight the expectation growth of the GPD in the country. Kenya's GDP grew by 5.7%, 5.8%, and 5% in 2015, 2016, and 2017, respectively, to an estimated \$78.4 billion as of 2016. Given Kenya's GDP's current state of development, there appears to be plenty of space for the growth of digital financial services. This financial innovation can play a significant role in this evolution by increasing economic participation and improve financial inclusion. According to Kambi (2022) studies found that the independent variables such as mobile, electronic or agency banking impact directly the growth of medium and small enterprise by providing access to loans which can therefore help keep the economy running. We can highlight that the fintech sector has attracted considerable investment from international tech companies. In Kenya, the G42, an Emirati holding working in intelligence artificial sector in collaboration with Microsoft has decided to invest \$1 billion for digital investment.

Moreover, previously studies have shown that platform like M-Pesa can contribute to reduce poverty by enabling millions of people excluded from traditional financial services to benefit from financial services. In their studies Jack and Suri (2011) have shown the ability of mobile money services such as M-Pesa to provide household access to emergency money and financial services.

➤ **Social**

Concerning the social factors that influence digital financial system, we might observe over the years the rise of mobile phone penetration which can have a positive impact on the implementation and the expansion of digital financial services. It should be noted that Kenya has a population of 48 million, growing at 1,69% annually. Moreover, according to the Population and Consensus Statistics (2019) results found have shown that Kenya young population has 73% of residents under 30 and a literacy

rate around 78% in the country, are factor more likely to contribute to the adoption and spread of digital financial services in the country.

Moreover, we might also highlight the gender disparities factors especially for women who often face barriers such as limited digital skills or societal norms, the implementation of digital financial service can reduce this gap. According to the studies of Dupas and Robinson (2013) emphasize that digital financial access has been particularly helpful to women and rural communities, reducing the gender and inequality. For instance, to address these challenges, M-Pesa has integrated women in fintech forum to reduce this gap and empower them with knowledge, resources and tools to achieve financial literacy, security and independency

We may also think about the disparity in financial literacy. Financial literacy is defined by the Organization for Economic Cooperation and Development (OECD) as possessing the knowledge, skills, attitudes, and behaviors necessary to make prudent financial decisions that eventually result in financial well-being. A poor degree of financial literacy is shown by the fact that only about 33% of individuals globally show an understanding of basic financial concepts (Klapper et al., 2015). Moreover, according to the studies of Ashenafi and Kingstone (2021) found that only 32% of people in Sub-Saharan Africa are reported to be financially literate which might discourage them to adopt digital financial services. In Kenya for instance, according to the World Bank (2021) data found have shown that 18,5% of the Kenyan population was illiterate, which was the highest rate of literacy in East Africa. Moreover, they highlighted the wide regional disparities. Nairobi, the capital of the city had the highest rate of literacy at 87% compared to North Eastern Province, the lowest, at 8%.

### **Technological**

Kenya is known as ‘Silicon Savannah’ for its technological development. The country is ranked in the third position as African country with the best data connection speeds. This characteristic is a key factor influencing digital financial service. Moreover, the country internet penetration has been reported to be 90% (Communication Authority of Kenya, 2022), which might be favorable to digital financial services.

We might also highlight the country fintech framework facilitated by a robust mobile infrastructure, and development in artificial intelligence (AI)

aspects which can boost the continued growth and scaling of digital finance in Kenya.

The rising threat of cybersecurity is another point to consider that might influence digital financial services in Kenya. However, banks and fintech companies in collaboration with governments invest a lot into strong security and regulation to protect the privacy of customer data and secure against fraud.

➤ **Environmental**

As of today, Kenya is grappling with a set of environmental challenges including water, pollution, drought, habitat loss, deforestation, and a lack of efficient waste management or treatment facilities. For instance, during the heavy rainy season, mobile signal might be impacted. Moreover, it should be noted that Kenya government has voted a law in July 2023 which mandates companies to actively reduce the pollution and environmental impact caused by the products or service they introduce into the market. Fintech companies support environment by prioritizing sustainability through digital financial service with many different initiatives. An example of this is M-Kopa, a major fintech company working in Kenya and other African countries which offer asset financing for solar energy kits. This is a sustainably project that encourages the use of renewable energy together with financial programs.

In addition, mobile money operator M-Pesa launch by Safaricom has played a crucial role in helping Kenya achieving its sustainability goals. In 2021, the company announced they have used around 328 GWh of power annually to operate its network. They have also put in place e-waste strategies for retrieving and recycling electronic goods. In 2020, Safaricom was able to recover and dispose approximately 150 tones of e-waste through its partners which not only complies with the local regulations but also underlines the company support towards environmental sustainability. As of 2022, the company had invested over Ksh 10 billion in weather resilient infrastructure to reduce the potential of climate change threats on its business.

Furthermore, as noted above, providers of digital financial services frequently face difficulties in providing education or installing their devices in a range of areas, and in rural areas in particular, poor road infrastructure and difficult terrain erect significant barriers. This has further denied access to digital financial services for

these populations. The environmental impacting digital financial services is modest at worst however, there are several significant concerns which are worth debating.

➤ **Legal**

Concerning the legal factors that influence digital financial system, we might highlight Kenya regulatory framework which is considerate to be among the most effective in Africa in term of financial system. Kenya legal environment has contributed to the implementation and adoption of digital financial services. The digital financial market is regulated by the Central Bank of Kenya which is in charge to handle new threats and regulatory gaps including the 2019 data protection act which provides recommendations for protecting customer financial information while addressing privacy and cybersecurity issues (Muthiora 2015).

Moreover, the Central Bank of Kenya has implemented laws regulating digital lending to prevent predatory lending and guarantee reasonable interest rates. Another important aspect to consider that might impact the legal framework is the Anti-Money Laundering act which has been enhanced to stop illicit financial transactions on digital financial service platforms. (Ndung'u,2019).

## **5. EFFECTS OF DIGITAL FINANCE ON ECONOMIC HEALTH**

Over the years, many discussions in literature have analyze the dynamics of economic growth and its relationship with digital financial service. We found that, the implementation of digital finance into financial systems has contributed to improve financial situation of many people and has particularly impact economic development. This innovative financial framework can improve access to financial services, enhancing economic productivity, reduce poverty and addressing financial disparities in gender and income. Economic growth and the reduction of poverty depend on having access to reasonably priced banking services. At the macro level, we found that countries with more advanced and complete financial systems are better equipped to handle capital and risks, which promotes economic growth and further reduces poverty and income inequality. Financial inclusion, or the availability and use of basic financial services, can improve the lives of the poor, particularly women, and reduce poverty on a micro level.

The findings of previous research found have shown that around 1.7 billion adults in the world are still unbanked, with 65% of the people in the poorest nations without transaction accounts and just 20% saving in the formal financial system. According to the Global Findex (2017) report has shown that only 33% of bankable adults have a transaction account in sub-Saharan Africa, signifying the region as the highest in the number of non-transaction accounts compared to other regions of the world (Demirgüç-Kunt et al. 2018). The poor financial inclusion in Africa prompted the development of mobile money, a financial technology-based payment method. According to the study conducted by the GSMA (2021) emphasized that mobile money in SSA has grown 11 times between 2011 and 2020, whereby it accounted for 64% of all global mobile money transaction values, reach- ing \$490 billion in 2020. The region also accounted globally for 53% of monthly active accounts, 45% of global registered

mobile money accounts and 48% of registered agents in 2019. Presently, on average, in over 20 fragile states with mobile money services (digital financial services), there are about 47 mobile money agents for every commercial bank branch, leading to the spread of innovative financial products and access to financial services (Espinosa-Vega et al. 2020).

The low financial inclusion is worrisome considering that financial inclusivity can arguably create inclusive economic wealth. However, the introduction of digital finance has reduced the burden of transaction costs and other inconveniences associated with opening a formal bank account for low-income households in developing countries according to the study conducted by Pazarbasioglu (2020). Moreover, study conducted by Fouejieu (2020) emphasized that digital financial services have made finance more accessible to people in developing countries by making it easier and cheaper to get financial services. Similarly, the study conducted by Kim et al (2007) emphasized that besides the traditional means of financial services open to customers in the banks, digital financial services in developing countries have been transformational with the objective of linking the unbanked to the formal financial system. The financial landscape in developing countries has been reshaped due to mobile money, and the traditional banking giants have been bypassed. The likelihood of receiving financial services using mobile phones has meaningfully improved financial inclusion (Blancher et al 2019), bridging the prevailing financial infrastructural gap in developing countries (Chatterjee, 2020).

Moreover, the findings detailed in the report indicate that among various elements affecting economic growth, financial inclusion is a vital factor that has garnered attention from policymakers. The United Nations (2016) defines financial inclusion as the consistent provision of affordable financial services that empower the underprivileged to engage in the formal economy. Essentially, the utilization of formal financial services is what constitutes financial inclusion. Previous research suggests that enhancing financial inclusion can alleviate poverty and stimulate economic growth by increasing access for individuals who previously lacked formal financial services. It should be noted that financial inclusion and financial development are largely relative concepts. According to the studies conducted by Lenka (2021) and Sarma (2008) emphasized

that it is important to note that a country can be financially developed while still having many people who do not have access to formal financial services. Thus, the two concepts support economic growth to varying degrees according to the study conducted by Li and Wong (2018). However, the findings of previous research conducted by Demirgüç- Kunt et al (2018); Klapper et al. (2016); Von Fintel and Orthofer (2020) stated that financial inclusion enables the utilization of financial services such as deposits, loans, and payment systems, resulting in investments in businesses, health, and education, thus, influencing the economy. People who were previously shut out of the financial system may now save, get loans, and start their own enterprises, which helps to improve the economy and reduce poverty. According to research conducted by Koku (2015), digital financial inclusion has a multiplier effect on the economy as a whole since money is collected from a larger portion of the population. The widespread use of mobile money services, such as M-Pesa, in Kenya should be emphasized as it has greatly improved living standards and fueled economic expansion. According to study by Jack and Suri (2016), M-Pesa assisted in lifting some 194,000 Kenyan families out of extreme poverty by expanding access to financial services. Additionally, a study by Churchill and Marisetty (2020) examined the connection between financial inclusion and poverty and discovered a negative correlation the poor tend to get poorer as financial inclusion increases.

Additionally, we could point out how digital financial services helped small and medium-sized businesses expand by making it easier for customers to access and pay for their services via digital platforms and enhancing their access to digital loans, both of which help to lower macroeconomic inequality and boost economic growth. For example, research by Kambi and Onyiego (2022) in Kenya revealed that digital banking applications, mobile banking, electronic money, and agencies all had a good impact on the financial development of small and medium-sized businesses. Local governments gain from this economic activity as well, and digital transactions can help them collect more taxes.

According to research, the underbanked population's financial circumstances and living standards may be improved by a deeper involvement in the formal financial system, which enables them to generate income, build financial assets, and develop flexibility to deal with macroeconomic and livelihood shocks (Chibba, 2009).

Demirgüç-Kunt et al. (2022) assert that digital financial services, in particular mobile banking, encourage financial inclusion and support economic growth by making it possible for people to save, invest, and start their own businesses.

Furthermore, research by Widarwati et al. (2022) has revealed a positive correlation between financial inclusion and digitalized financial transactions. Their findings indicate that small and medium-sized businesses that have a higher degree of financial inclusion and financial digitalization perform better and grow more quickly. In other words, small and medium-sized businesses need to have higher levels of digital and financial inclusion in order to be financially and operationally successful and thrive in the competitive, disruptive business climate.

Additionally, Prasad (2010) emphasizes that small and medium-sized businesses and small-scale entrepreneurs frequently require a lot more labor to operate; as a result, their inability to obtain sufficient capital has a negative impact on the growth of employment in general. A rise in the economic share of the formal financial sector, which fosters economic development, strengthens the case for interest rates as a crucial tool for macroeconomic stability. It is important to keep in mind that in order for small and medium-sized businesses to obtain finance, they need better fintech. Since most owners of small and medium-sized businesses do not have bank accounts or utilize them for financial transactions, effectively utilizing fintech companies may be essential to increasing their financial inclusion. According to research by Thomas and Hedrick-Wong (2019), fintech start-ups that address the financial requirements of underbanked and unbanked individuals can play a critical role in advancing financial inclusion. Because of their propensity for asset-lightness, these businesses are likely to innovate more quickly than their more established rivals. According to their result, these businesses are able to swiftly ascertain customer preferences and spot market gaps, which opens up new business prospects. This suggests that greater levels of financial inclusion can promote greater participation in the formal financial system by various economic sectors. Financial innovation and economic growth are closely related, according to both theoretical and empirical research.

An efficient financial system lessens the financial limitations that enterprises must contend with, according to the studies conducted by De Koker and Jentzsch (2013) that examined a firm-level dataset. According to recent studies, financial deepening helps the poor since it promotes income inclusion and lowers poverty.

Additionally, Merritt (2011) showed that financial innovation promotes the distribution of capital across the economy and reduces transaction costs, enabling the emergence of new private sector business models that would support other crucial development objectives. Additionally, research by Cecchetti and Kharroubi (2013) highlighted that financial innovation through mobile money transfers may improve the efficiency of government transfer payments, which in turn provides efficiency in government expenditure.

Plus, previously research and discussions have demonstrated that a deeper engagement with the formal financial system may improve the financial situation and living standards of the underbanked population by allowing them to create income, accumulate financial assets, and gain flexibility in responding to livelihood and macroeconomic shocks (Chibba, 2009). According to Demirgüç-Kunt et al. (2022), by enabling individuals to save, invest, and launch their own enterprises, digital financial services particularly mobile banking promotes financial inclusion and boost economic growth. It should be noted that the rise of digital financial services has created new job opportunities attracting people specialize in technological advancement.

Large agent networks are essential to the operations of fintech companies. For example, M-PESA has had a significant effect on people in Kenya, where it has generated over 250,000 direct jobs and KSh 234 billion, or \$2.1 billion, in social value. An estimated 2% of Kenyan households, or around 194,000 households, have been lifted out of extreme poverty since 2008, according to a survey by MIT and Georgetown University. It should be highlighted, though, that M-Pesa's influence goes beyond its own boundaries; the fintech company has produced over 600,000 employments, including those of agents and developers, in eight different nations. For instance, in Tanzania the monthly transacted occurred via this financial framework is equal to 37% of the GDP. Moreover, with over 1000 agents and 955 new merchants registered in 2020 in Lesotho, M-PESA has fostering job creation and financial independence for populations

The influence of digital finance on GDP is among its most prominent consequences on economic growth. A 10% increase in the use of digital financial services can lead to a 1.5% boost in GDP growth, based Sahay et al.'s (2020) study on

financial technology in Africa. It should be mentioned, for example, that in 2021, digital financial transactions in Kenya accounted for more than half of the country's GDP (Central Bank of Kenya, 2021). Besides, previous research has shown that digital financial inclusion positively affects economic growth, with a geographical impact on other nearby countries that is related to the relationship between financial inclusion and economic growth. One such study was carried out by Shen et al. in 2021. Mawejje and Lakuma (2019) and Nan (2019) claim that mobile money increases total economic activity in Uganda and SSA, respectively.

Nowadays, due in large part to the numerous problems that exist, policymakers and scholars are now interested in the potential of digital financial inclusion to lower poverty and promote economic growth. If these problems are resolved, digital financial services could become more inclusive and benefit consumers, businesses, governments, and the economy.

However, since 2010, the World Bank and the G-20 nations have been spearheading an effort to increase financial inclusion in emerging and developing nations in an effort to lower poverty rates in these nations. Over the years, the G-20's global partnership efforts to expand financial inclusion through digital services have shown impressive achievements, lowering obstacles to financial services for the people of underdeveloped and excluded countries.

Previous studies and discussions found suggest that in order to boost economic growth in these nations, policymakers in Sub Saharan Africa should prioritize institutional quality and governance. Policymakers should combine economic development policies with institutional quality and governance to improve digital financial inclusion. In most of African nations, we can observe that the issue of governance is generally linked to corruption and related to the type of government in place whether it be democratic, military, or authoritarian and because these types of government systems have an impact on the relationship under study, governments should take the fight against corruption very seriously. The performance of financial institutions is severely hampered by low institutional quality, which also creates financial exclusion. This includes widespread corruption, lax enforcement of property

rights, political instability, poor bureaucratic quality, unaccountable leadership, and bad corporate governance.

## **5.1. Macroeconomic Impact**

By enhancing economic growth, promoting financial inclusion, and expanding access to financial services and products, digital financial services have transformed the macroeconomic environment in Africa. Digital platforms like M-Pesa, for example, have emerged as a potent instrument in Kenya to increase economic productivity, create financial accessibility and inclusion, and support macroeconomic stability, particularly in relation to poverty alleviation. Demirgüç-Kunt et al. (2018) claim that by giving previously unbanked people access to savings, loans, insurance, and other financial services, financial inclusion helps to lower poverty. In Kenya, M-Pesa mobile money has enhanced a lot of people to the formal financial system, which has contributed to reduce extreme poverty. According to Jack and Suri (2016) studies states that M-Pesa has assisted around 194,000 Kenyan households out of poverty by improving access to financial resources.

Secondly, we can highlight the economic impact and productivity made by the implementation of digital financial service. According to the studies conducted by Sahay et al (2020) results found have shown that digital financial services can boost economic activity by making payments easier, enhancing credit access to small and medium enterprise, and improve their productivity. Mobile platform transactions have improved market efficiency and facilitated quicker exchanges of goods and services in Kenya. A study by Mishkin (2001) focused on how financial systems contribute to economic growth and how mobile money enhances credit flows and liquidity in an economy, creating an atmosphere that is conducive to business success. Prior research has shown that central banks can better monitor inflation trends and modify policy thanks to digital financial services, which provide them with more access to real-time data on financial activity and transactions. As more transactions move from cash to digital networks, central banks may find it more challenging to control the money supply using traditional tools.

Thirdly, we might emphasize how the expansion of digital financial services has affected monetary policy and inflation in economies. Economic theory states that

unemployment is one of the most significant factors influencing economic development. It is highlighted as the main macroeconomic problem that needs to be resolved by governments. Inflation is the general and continuous increase in the average price of products (Makiw, 2011). A high rate of inflation indicates a general increase in prices, which could worsen the economy by making it impossible for consumers to afford the goods and stifling aggregate demand, according to earlier research by Romer (2012), who highlighted that inflation is determined by the consumer price index. Through the facilitation of transactions and the expansion of financial inclusion, digital financial services have helped stabilize inflation by improving market efficiency and reducing reliance on unofficial cash economies. In Kenya, platforms like M-Pesa have been crucial to maintaining price stability, especially during periods of economic instability like the COVID-19 pandemic.

However, the rise of digital financial services also presents challenges for central banks, as they must adjust traditional monetary policy tools to take into consideration changes in money demand and liquidity brought about by digital money flows. The Central Bank of Kenya responded by cutting reserve requirements and interest rates, indicating its support for the stabilizing effects of online financial services. Despite these benefits, issues like unequal access to digital services and the need for unified regulatory frameworks across Africa remain important considerations to ensure that digital financial services will continue to support sound monetary policy and stable inflation.

Finally, we can also highlight the impact of digital financial services on employment and job creation. Digital financial services generate jobs, particularly in the mobile money, fintech, and digital infrastructure sectors. In Kenya, the rise of mobile money agents and digital entrepreneurs has led to new jobs, specialized in technological advancement. Kenya has benefited greatly from M-PESA, which has maintained more than 250,000 direct jobs and created KShs. 234 billion in social value. Access to formal financial services has been extended to over 20 million clients in deep rural areas

The results of previous findings have shown that digital financial services can help alleviate long-standing demand and supply side constraints to delivering affordable and suitable financial services to the poor. The long-standing constraint on the demand side includes firstly the Volatile and small incomes. The poor require affordable, low-value financial services that allow them to deal with small, unpredictable, incomes earned in the informal and agricultural sectors. Many poor families also rely on small-value remittances and government transfers. Digital financial services can help through special accounts and pre-paid e-money products that do not carry onerous maintenance and transaction fees or minimum balances, which are common at traditional financial institutions. In developing economies, about two-thirds of adults without financial services cite having too little money as a barrier to account ownership, and roughly one-quarter say accounts are too expensive.<sup>15</sup> In Latin America and the Caribbean, roughly half of adults without financial services say accounts are too expensive. With lower marginal and fixed costs, digital financial services can be more cheaply delivered. This also allows for transaction-based pricing, which can be more suitable for the poor. Secondly, we can highlight the Geographical barriers. In developing economies, roughly one-fifth of adults without financial services cite distance to financial institutions as a barrier to account ownership. The share exceeds 30 percent in Brazil, Indonesia, and Kenya. Through mobile technology and agent networks, DFS reduces the need to travel to financial service centers. Digital financial services allow the poor to conduct financial transactions through mobile devices and use retail agents to send money or convert digital balances to cash. Moreover, we can point out the Informality and lack of documentation. The poor often operate in the informal sector where they lack proper identity verification and leave little trace of their economic activity and assets. This poses challenges to financial inclusion. Almost one-fifth of adults without financial services cite the lack of documentation as a key obstacle to account ownership. Digital financial services can support the undocumented poor by leveraging digital means of authentication and transaction initiation, which reduces costs. Basic, small-value Digital financial services accounts with simplified Customer Identification can help overcome the more stringent documentation requirements associated with traditional accounts. Digital financial service can leverage digital transaction data and alternative data sources, such as from social media or e-commerce platforms to overcome

information asymmetries. This can compensate for the poor's lack of adequate formal credit histories and financial statements, as well as their limited ability to register collateral, which could have allowed them to access financial services at more suitable terms. As such, digital financial service offers an opportunity to help reduce informality. Another point to consider is the Literacy and trust. Poor, potential first-time users of formal financial services often lack awareness of financial services, as well as the skills to understand and responsibly use them. Indeed, those without financial services are more likely to be less educated, and almost a fifth cite distrust as a reason to refrain from using financial services. Moreover, small and medium enterprise typically exhibit weaker financial management skills. This also poses higher financial risks. Therefore, strong financial consumer protection frameworks and financial literacy are important enablers of financial inclusion.

Concerning the long-standing constraint on the supply side we can highlight firstly, the high operating costs. Historically, many incumbents have operated expensive brick-and-mortar networks, maintained outdated core technologies, and relied on costly and time-consuming human and paper processes. These infrastructure and processing costs make small transactions and maintaining low-balance accounts unprofitable. Digital financial service can be automated, tailored to customer needs, and delivered remotely at lower cost, making small-value transactions commercially viable. Another point to highlight is the legacy business models. Historically, many incumbents offered standardized financial services, which are more appropriate to serve more affluent individuals and larger companies, since they rely on off-line delivery channels in urban areas and traditional sources of information. However, the poor who have volatile incomes may need more flexibility to extend payments, or to repay when cash is on hand, which may be the same day the loan was taken. DFS are rooted in new business models, can be delivered at lower incremental cost, and can be designed with the flexibility to better meet the financial needs of the poor. Finally, we can point out the limited competition and innovation aspect. Historically, in many developing economies, incumbents have enjoyed considerable market power, protected by barriers to entry through restrictive regulations and a weak startup ecosystem. As a result, these financial institutions were free to charge high fees and margins and felt less pressure to invest and innovate to tap into new and under-served market segments. Digital financial service business models enable new entrants to

offer bank-like services that compete effectively on both price and quality. Nimble incumbents that focus on digital transformation or partner with new entrants can also increase competition and promote innovation.



## 6. SOCIOECONOMIC DISPARITIES

Digital financial services have penetrated deep across African nations, this innovative financial framework has enhanced inclusiveness and contributed to attract a large part of the population that were previously excluded to benefit from financial service and therefore participate to the economy. However, several socioeconomic barriers influence its expansion. Firstly, it is important to clarify the concept of socioeconomic disparities. Socioeconomic disparities refer to the inequitable distribution of resources, opportunities and privilege within or among social system, typically driven by condition such as income, education or the geographical factor. Additionally, previous studies and discussions have defined "socioeconomic status" as an individual's position in society, which is impacted by a number of factors, such as family income, education, type and level of occupation, wealth, support from friends and family, access to high-quality healthcare, proper nutrition, food security, and the availability of decent housing. It is no secret that Africa is consider to be a continent known for its cultural diversities which can enhance several ethnical and socioeconomics disparities.

In many nations such as Kenya, Nigeria, Ghana, the implementation and the emergence of digital financial services has led to enhanced financial inclusion and contributed to the growth of businesses as well as improve economic development and decrease poverty reduction. However, this development has not been widely represented because of problems with poverty, location, gender, education, and internet access. For example, wealthy businesses are better positioned to benefit from the growing use of digital financial services, whereas low-income individuals are struggling to make ends meet and aren't even considering buying a mobile phone, which may limit their access to financial services.

Moreover, we might highlight the educational literacy levels which might potentially influence the consumer judgments regarding new technology related to digital financial services. Educated people tend to have more financial knowledge about the products and services and the benefits they can gain from it. This advantage allows them greater access to financial services. However, this gap influence less educated individuals and limited their access to financial services, but also impact the spread of digital financial services on a large part of the population. Acknowledging the importance of this evidence, several strategies and measures have been introduced to minimize these deficiencies. For instance, in recent years, in Kenya, according to the studies of Tiony and Yin (2023) show a positive correlation of approximately more than 20% between literacy rates and financial inclusion which suggest that the more literacy evolve, the more individuals have better knowledge of financial services and can enhance their participation.

One additional factor to consider is the cultural standard in some African society, where the father is the head of a family who has to manage finance and the mothers usually mostly stay at home and are more sensitive to be excluded in term of access of financial services. Unfortunately, compared to men, women suffer the most using access to digital financial services. Women in the African region have more obstacles to obtaining identification documents and mobile phones, which affects their capacity to possess mobile money accounts. According to earlier research, 48.4% of people in Sub-Saharan Africa who had an account with a financial institution or mobile money service provider in 2017 were men, and just 36.9% were women, compared to 94.5% and 92.9% of account holders in high-income nations, respectively. Compared to other African countries, Kenya's financial sector has undergone significant development and change, mostly as a result of digitalization and increased mobile phone use, which has enhanced financial inclusion. However, studies conducted by Morris Gitonga, Michael Fumey, and Naftaly Mose (2024) highlighted that women in Kenya are 33% more likely than men to own a mobile phone, which is a significant barrier that has hindered their access to and the proliferation of digital financial services. Conversely, research by Jack and Suri (2016) indicates that Kenyan households headed by women have benefited most

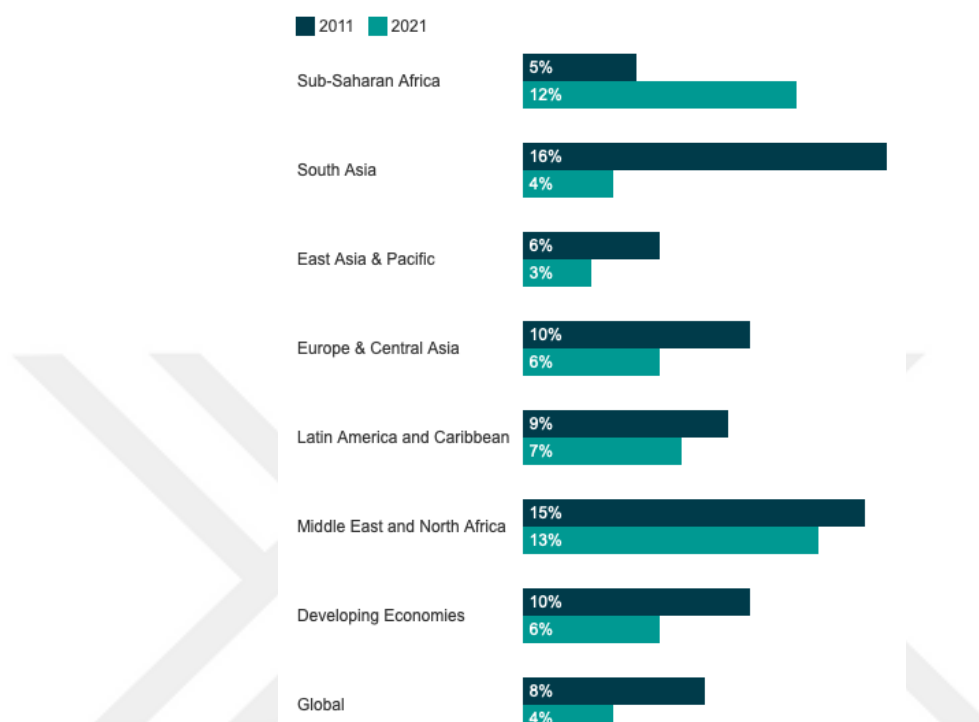
from digital finance, which helps them become more financially independent. It should be noted that digital financial services such as M-Pesa which has approximately 80% of subscriber, has contributed to support over 194,000 households out of extreme poverty.

For instance, inadequate infrastructure in some rural locations is another obstacle that could hinder the adoption and accessibility of digital financial services. Fintech businesses may encounter transportation or roadblocks when attempting to deliver its agents or equipment to these remote locations. For fintech companies, these obstacles may have an effect on the adoption and growth of digital financial services. A prior study by Finke et al. (2016) highlights the relationship between age and financial literacy, claiming that literacy increases with younger age but starts also to decline with age and that older people have lower levels of financial literacy since they have less financial responsibility.

Additionally, it should be noted that family financial knowledge and reading ability also have an impact on financial literacy. Young individuals are more likely to comprehend risk diversification if their parents are financially knowledgeable and own stocks and retirement accounts, according to a study by Lusardi et al. (2010). According to Lachance (2014), who emphasized the impact of neighborhood on financial literacy, residents of more educated neighborhoods have higher levels of financial literacy, as evidenced by their use of more banking products, larger savings for the future, and involvement in less expensive credit activities.

Going forward, the future of digital financial service in Africa is promising. Based on the spread of mobile phone adoption and mobile technological advancement as well as the commitment from governments, fintech providers and banks to promote more inclusive financial services we can observe that there is an increasingly trends from population toward digital financial services reduce exclusion gaps from traditional banking. We can highlight that digital finance has promoted financial inclusion, reduce poverty, promote economic growth and businesses expansion in Africa access through accessible and affordable services. However, several socioeconomic disparities impact this financial framework. The implementation of sufficient regulation

and legislation as well as infrastructure improvement or more financial education can help bridge these gaps and ensure that everyone can equally benefit from digital financial services.



6.1. Gender gap in financial account ownership by region

Source: Global index (2021)

On this table, we can observe that the gender gap in account ownership have falling from 8% in 2011 to 4% in 2021. This can be explained by a major improvement in financial inclusion for women, driven by digital financial services, targeted policy reforms, and mobile banking innovations. The gender gap in Sub-Saharan Africa grew from 5% in 2011 to 12% in 2021. According to this, men benefited disproportionately even though overall account ownership. It could be due to structural barriers like women's lack of identification, access to mobile phones, and digital literacy, as well as cultural norms that limit women's financial independence and a lack of gender-focused policy interventions. In South Asia, the gap dropped dramatically from 16% in 2011 to 4% in 2021 because of the success of financial inclusion programs, such as India's Pradhan Mantri Jan Dhan Yojana (PMJDY), which facilitated millions of women opening bank accounts. The gap has decreased from 6% in 2011 to 3% in 2021

across East Asia and the Pacific, indicating a modest but steady improvement. Advanced banking and mobile infrastructure in nations like China and Indonesia properly supports both sexes. The gender gap in Europe and Central Asia decreased from 10% in 2011 to 6% in 2021, according to the data. This decline was caused by a number of variables, including differences in income and the employment habits of men and women in some economies. Moreover, in Latin America and Caribbean the gap narrowed from 9% in 2011 to 7% in 2021, showing limited decrease. Despite digital finance growth, barriers such as informality in employment and lower smartphone penetration among women still exist. Middle East and North Africa (MENA) show a bit reduction from 15% in 2011 to 13% in 2021 due to cultural and legal restrictions on women's financial rights, mobility, and work still present major obstacles to inclusion. To sum up, between 2011 and 2021, most regions saw a significant reduction in the gender gap in bank account ownership, which is indicative of increased worldwide efforts to promote inclusive finance. Strong policy initiatives and digital advances propelled South Asia most notable advancements. In a same vein, while certain differences still exist, East Asia, Latin America, and Europe all saw consistent progress. However, the gap widened in Sub-Saharan Africa, indicating that fair financial inclusion requires addressing structural barriers including digital literacy, mobile phone access, and social norms. The data reminds stakeholders that deliberate, targeted policies are crucial to developing fully inclusive financial systems, highlighting both the achievements and the continued challenges in decreasing the gender gap.

## **6.1. Digital Literacy and Lack of Accessibility**

Nowadays, technological advancement is improving and digital literacy is an essential skill required, especially in the context of financial services. In Africa, a lack of digital literacy has several negative effects, including risks to public health, missed opportunities to study and earn more money to better livelihoods, and the continuation of social inequality.

Historically, it should be noted that due to the continent's colonial past and ongoing underdevelopment, low literacy and a lack of digital skills continue to be persistent issues in Africa, impeding the widespread adoption of modern technology (GSMA 2022). According to earlier research, digital

literacy in Africa is influenced by two main contextual factors: political and economic.

In terms of the economy, Africa is the continent with the highest rate of chronic poverty. According to the study conducted by Fuchs and Horak (2008) report highlight the lack of technology resources and digital capacities that resulted from long-term colonial and post-colonial exploitation is the primary cause of poverty in Africa. Sub-Saharan Africa continues to have the highest rates of multifaceted poverty, with impoverished individuals experiencing significant electricity deprivation and thus lacking access to opportunities for digital literacy development.

In terms of political context, most African countries are classified as either “hybrid regimes” or “authoritarian regimes”. This hamper effective digital governance and potentially leads to low digital literacy. For example, in the study conducted by Kayisire and Wei (2016) suggested that democratic imperfections in certain large African economies, such as Algeria and Angola, contribute to inefficiencies in digital financial service adoption and usage. Moreover, in South Africa, according to Kajee and Balfour (2011) report emphasized that, the elite minority possesses more opportunities to improve digital literacy, while various demographic factors, such as class, race, gender, and age, inhibit the majority from becoming more digitally literate.

In Africa, a lack of digital literacy has several negative effects, including health risks, missed opportunities to study and earn more money to better livelihoods, and the continuation of social inequality. Everything being considered, digital literacy in Africa is influenced by a variety of intricate aspects and has dire repercussions. However, previous research has left us with several important questions that need more investigation. Firstly, the findings of previous research found and studies focused on either a single individual or a particular nation, paying little attention to the state of digital literacy in Africa as a whole. Despite it is impossible to compare the levels of digital literacy in different African nations due to a lack of country-level statistics. Secondly, study focused on the ways in which digital literacy is shaped in various African social contexts but they have not been extensively examined in previous individual research. In Kenya, where the two aggregate meet the requirement

contributing to the implementation of digital financial services, this innovative framework has been rapidly expanded by its particularly wide spread of mobile money and other financial services, the understanding on how to manage these platforms and benefit from these services is becoming a huge concern for populations.

First of all, it is important to understand the concept of digital literacy. In his study, Esther (2004) has defined this concept as the competencies and skills needed for navigating a fragmented and complex information environment. In the financial services context, it is about understanding how to use a mobile banking platform. It also implies understanding secure online behavior, the ability to interpret financial information, and make financial decisions on the basis of digital interactions. According to the studies conducted by Van Deursen and Van Dijk (2014) results found have shown that, a lack of digital literacy can have a number of detrimental effects, including restricting participation in the political, social, cultural, educational, and economic spheres and escalating already-existing social inequality.

As a source of increasing inequality, the concept of digital literacy has emerged in the mid- 1990s and gradually gained popularity in political and academic according to the study of van Dijk (2020) but also in most of African nations. The findings of previous research found have shown that over the past three decades, digital literacy research has undergone two shifts involving three levels. According to the study conducted by van Dijk (2020) the first-level digital literacy focuses on physical and material access, serving as a prerequisite for improving digital literacy and benefiting from technology. Moreover, he highlighted that the physical access refers to the opportunity to use technology by obtaining them in private or public settings. Similarly, the material access includes the means required to sustain the ongoing use of technology such as computer devices, software (subscriptions), and peripherals, and encompasses three aspects: device opportunity, device and peripheral diversity, and the maintenance expenses of devices and peripherals, all of which are correlated with inequalities in Internet skills, uses, and outcomes. To address the shortcomings of a classification of having access to technology or not, in his study Hargittai (2002) proposed the second-level of digital literacy to define the ability to take advantage of

technology in various ways. Disparities in technology skills and usage are the primary concerns of the second-level digital divide research, which proposes that physical and material access is useless without the necessary skills, knowledge, and support for efficient use. The third-level digital divide emphasizes the positive and negative outcomes of technology use, such as economic benefits and loss of security and privacy, and concerns the interrelationship between digital inequality and social inequality according to the study conducted by Van Dijk (2020). Overall, digital divide has evolved into a multidimensional concept involving the disparities in access, usage, and outcomes of technology (Lythreathis Singh and El-Kassar 2022).

Moreover, results of finding found emphasized that the third levels of the digital literacy are interconnected and catalyze complex relationships. One common type is a chain reaction. We found that the access to digital literacy can have an impact on the outcome divide. For example, studies conducted by Wei et al. (2011) demonstrated that students without home computers report lower digital literacy, and those with lower digital literacy tend to have worse learning outcomes. Another prototype is an inequality. We can suggest that the social inequality leads to digital inequality, which in turn reinforces social inequality. The study conducted by Warren (2007) states that as new technology is rapidly embedded in society and increasingly viewed as the default communication media for everyone, such a digital vicious cycle is likely to occur. On the one hand, people without technology access and skills, for example, disadvantaged and vulnerable groups, are absolutely excluded from certain social domains that only exist online. According to the study conducted by van Dijk (2020) stated that on the other hand, people in higher social classes benefit more or earlier than others and acquire more resources, creating relative inequalities. The results of previous finding found have shown that only through the mastery of the principal digital skills and competencies can vulnerable groups gradually become digitally included and acquire social, political, and economic capital in contemporary society, thereby narrowing inequality gaps. The results of findings also discovered that digital literacy helps improve the access to financial services and foster resilience building financial behaviors, such as insurance decisions, for vulnerable groups in four African countries Kenya, Nigeria, Tanzania, and Uganda.

According to the findings of our research, a nation overall level of digital literacy is impacted by socioeconomic factors like infrastructure and policies, while individual digital literacy is influenced by a number of demographic characteristics like income, gender, race, and education. It should be noted that in Kenya, the level of digital literacy varies significantly depending different demographics areas. Recent studies found have shown that urban areas are better suited to achieving higher levels of digital literacy due to better access to education. While, rural populations often faced many challenges in using digital financial services effectively. Factors such as a lack of formal education, limited exposure to technology or network issues contributed to these disparities. As a result, many people living in these areas have no idea of the full benefits that digital financial services can provide, and hence fail to join the digital economy.

Moreover, we might highlight the educational literacy levels which might potentially influence the consumer judgments regarding new technology related to digital financial services. Educated people tend to have more financial knowledge about the products and services and the benefits they can gain from it. This advantage allows them greater access to financial services. However, this gap influence less educated individuals and limited their access to financial services, but also impact the spread of digital financial services on a large part of the population. Acknowledging the importance of this evidence, several strategies and measures have been introduced to minimize these deficiencies. For instance, in recent years, in Kenya, according to the studies of Tiony and Yin (2023) show a positive correlation of approximately more than 20% between literacy rates and financial inclusion which suggest that the more literacy evolve, the more individuals have better knowledge of financial services and can enhance their participation. According to the studies conducted by Ragnedda Ruiu and Addeo (2022) report found have shown that as a key component of the second level of digital literacy can benefit disadvantaged groups and promote social equality. Previous research indicated that low education levels and poor computer skills lead to digital exclusion of vulnerable populations such as the elderly, people with disabilities, and residents of underdeveloped regions (Khanlou et al. 2021 Tan and Chan 2018 Watkins et al. 2018)

One additional factor to consider is the cultural standard in some African society, where the father is the head of a family who has to manage finance and the mothers usually mostly stay at home and are more sensitive to be excluded in term of access of financial services. Unfortunately, compared to men, women suffer the most using access to digital financial services. Women in the African region have more obstacles to obtaining identification documents and mobile phones, which affects their capacity to possess mobile money accounts. According to earlier research, 48.4% of people in Sub-Saharan Africa who had an account with a financial institution or mobile money service provider in 2017 were men, and just 36.9% were women, compared to 94.5% and 92.9% of account holders in high-income nations, respectively. Compared to other African countries, Kenya's financial sector has undergone significant development and change, mostly as a result of digitalization and increased mobile phone use, which has enhanced financial inclusion. However, studies conducted by Morris Gitonga, Michael Fumey, and Naftaly Mose (2024) highlighted that women in Kenya are 33% more likely than men to own a mobile phone, which is a significant barrier that has hindered their access to and the proliferation of digital financial services. Conversely, research by Jack and Suri (2016) indicates that Kenyan households headed by women have benefited most from digital finance, which helps them become more financially independent. It should be noted that digital financial services such as M-Pesa which has approximately 80% of subscriber, has contributed to support over 194,000 households out of extreme poverty.

For instance, inadequate infrastructure in some rural locations is another obstacle that could hinder the adoption and accessibility of digital financial services. Fintech businesses may encounter transportation or roadblocks when attempting to deliver its agents or equipment to these remote locations. For fintech companies, these obstacles may have an effect on the adoption and growth of digital financial services. A prior study by Finke et al. (2016) highlights the relationship between age and financial literacy, claiming that literacy increases with younger age but starts also to decline with age and that older people have lower levels of financial literacy since they have less financial responsibility.

Additionally, it should be noted that family financial knowledge and reading ability also have an impact on financial literacy. Young individuals are more likely to comprehend risk diversification if their parents are financially knowledgeable and own stocks and retirement accounts, according to a study by Lusardi et al. (2010). According to Lachance (2014), who emphasized the impact of neighborhood on financial literacy, residents of more educated neighborhoods have higher levels of financial literacy, as evidenced by their use of more banking products, larger savings for the future, and involvement in less expensive credit activities.

According to the findings of our research, a nation overall level of digital literacy is impacted by socioeconomic factors like infrastructure and policies, while individual digital literacy is influenced by a number of demographic characteristics like income, gender, race, and education. It should be noted that in Kenya, the level of digital literacy varies significantly depending on different demographics areas. Recent studies found have shown that urban areas are better suited to achieving higher levels of digital literacy due to better access to education. While, rural populations often faced many challenges in using digital financial services effectively. Factors such as a lack of formal education, limited exposure to technology or network issues contributed to these disparities. As a result, many people living in these areas have no idea of the full benefits that digital financial services can provide, and hence fail to join the digital economy.

Another point to consider is as Kenya stand among lower- and middle-income economy, many people living in rural areas have low or an average revenue and cannot afford expensive mobile phone. They must content themselves with a basic mobile phone which can just make basic calls and text messages in such case the scope of access to application based on digital mobile services tend to be restricted.

Moreover, the results of findings found have shown that, most of the digital financial services platforms are designed in English, which might impact non literate population. The design default of digital platforms was not considering local available languages and circumstances, so this design bias has affected potential users who do

not understand the current language of the application making hard for them to navigate through platform interface.

Additionally, the age structure should also be point out. They often lack the digital skills necessary to benefit from digital financial services and show astonishment and misunderstanding to this innovative system, leading them to be more vulnerable to fraud and scams. According to Kenya FinAccess Survey (2021), more than 20% of population are financially excluded due to a lack of digital understanding.

Through our research, we found that the lack of accessibility remains a critical barrier hindering the full potential of digital financial services in Kenya and, by extension, in many African economies. While Kenya has often been lauded as a global leader in mobile money innovation particularly through platforms such as M-Pesa structural inequalities and access gaps persist, limiting the inclusive impact of digital financial services on socioeconomic development. According to the study conducted by Suri and Jack (2016), M-Pesa significantly reduced extreme poverty among Kenyan households by enhancing financial resilience and access to savings mechanisms.

However, such benefits are not equitably distributed. Rural populations, women, the elderly, people with disabilities, and individuals with low digital literacy continue to face multifaceted barriers to digital financial services adoption (GSMA, 2021). These include limited access to mobile phones, unreliable internet infrastructure, language barriers, and inadequate user interfaces not designed for individuals with low literacy levels (Demirgüç-Kunt et al., 2018). For instance, in remote Kenyan counties such as Turkana or Wajir, low mobile network coverage and high costs of digital devices restrict usage, reinforcing financial exclusion (World Bank, 2022). Moreover, the digital gender divide remains substantial.

A study conducted by the Kenya National Bureau of Statistics (KNBS, 2021) shows that women are less likely than men to own mobile phones or have control over digital financial transactions, thereby marginalizing them from opportunities provided by digital financial service. Moreover, study conducted by The United Nations Capital Development Fund (UNCDF, 2020) also emphasizes that without intentional policy frameworks targeting these underserved groups, digital financial services could exacerbate existing socioeconomic disparities instead of bridging them. Therefore, to

harness the transformative potential of digital financial service in Kenya, development strategies must prioritize equitable access by investing in infrastructure, promoting digital literacy, and implementing inclusive financial regulations. Addressing these access challenges is not merely a technological issue but a socio-economic imperative for sustainable financial inclusion and economic development in Africa.

Even though digital financial services have increased financial inclusion and raised many Kenyans standard of living, their full potential is limited by issues with accessibility and digital literacy, which prevents many people from being economically empowered.

To maximize the influence of digital finance on Kenya economic development and minimize inequality, these concerns must be addressed through improved digital literacy initiatives, reasonably priced internet and device access, and inclusive regulations.

Using financial services is also hampered by a lack of digital literacy. One in three users still rely on relatives or agents to access their accounts, despite the fact that mobile money accounts have increased financial inclusion. This exposes them to a number of consumer dangers related to digital financial services. As a result, additional work must be done to close the gender gap in the area and guarantee that account holders can utilize them to enhance their general well-being and financial resilience.

Going forward, the future of digital financial service in Africa is promising. Based on the spread of mobile phone adoption and mobile technological advancement as well as the commitment from governments, fintech providers and banks to promote more inclusive financial services we can observe that there is an increasingly trends from population toward digital financial services reduce exclusion gaps from traditional banking. We can highlight that digital finance has promoted financial inclusion, reduce poverty, promote economic growth and businesses expansion in Africa access through accessible and affordable services. However, several socioeconomic disparities impact this financial framework. The implementation of sufficient regulation and legislation as well as infrastructure improvement or more financial education can help bridge these

gaps and ensure that everyone can equally benefit from digital financial services.



## 7. CONCLUSION

Following this study which assessed the impact of digital financial services on African economies by focusing on Kenya. We explored the relationship between the implementation of digital financial services and economic indicators such as the GDP or poverty reduction through secondary data. Research found have shown that the widely spread of digital financial services has resulted in more financial inclusion in a context where traditional banks were already in a tough position mainly due to their inability to provide financial services to certain segments of the population. In Kenya, where approximately 14 million of the populations are unable to benefit to financial services through formal loan application services and 12 million have no access to financial services at all, the country has been able to restructure its financial system and solve this problem by implementing efficient digital financial services such as M-Pesa mobile money launched in 2007 by Vodafone and Safaricom.

M-Pesa has considerably enhance financial inclusion by providing access to digital financial services to millions of Kenyans in poverty. Since then, Kenya has positioned itself as a leader in this sector. However, ongoing obstacles restrict its full implementation.

The findings reveal that, despite African countries such as Kenya, Nigeria, Ivory Coast or South Africa are made significant progress in digital financial services, low levels of digital literacy which expose them to cybersecurity threats or infrastructural challenges impact the spread and adoption of digital financial services to a large part of the population. We can observe that, in generally, vulnerable groups particularly women, the elderly, and people living in rural areas tend to be excluded to these services. Governments, fintech companies and other stakeholders should focus on reducing these barriers by providing regulations as well as invest in educational programs that can enable population to fully benefit from digital financial services.

Moreover, the findings highlighted how digital financial services can contribute to economic development. Through its range of services providing especially loans, digital financial services contribute to enhance economic participation of small and medium enterprises as well as individuals and decrease poverty. It should also be noted that fintech companies created a lot of job opportunities because they need agents to provide their services across the country.

Looking ahead, Kenya stands at a critical crossroads. The country has all the requirement needed such as the infrastructure, the innovation culture and the user base to lead inclusive digital finance. However, success depend more than just technological advancement. Ultimately, digital financial services should be part of a broader vision that share economic resilience, accessibility and opportunity. This thesis has attempted to contribute to that vision by shedding light on the progress made, the challenges that remain, and the paths forward for a more inclusive financial future.

## **8. RECOMMENDATION**

- Implement across the country digital literacy campaigns
- Design digital financial service solutions for illiterate users.
- Expand the digital network in underserved areas.
- Sponsor affordable digital devices
- Integrate financial education into school course
- Promote cybersecurity awareness and consumer protection
- Encourage multi-stakeholder participation.
- Promote regional content and cultural value.
- Regulate and encourage fair pricing models.
- Strengthen regulatory framework of digital financial services
- Reduce infrastructure barriers

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- **Bachelor's level:** 2018, Mundiapolis University (Morocco), Accounting and Financial
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### **OCCUPATIONAL EXPERIENCE AND AWARDS:**

- **Intern**  
National bank for agricultural development(BNDA) - Bamako  
From July to August 2019  
Sorting and completing customers certified check  
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