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A Literature Review of the Effect of Digital Banking on the Performance of Commercial Banks in Kenya

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Abstract: **Digital banking, including technologies such as mobile banking, online banking, and electronic payments, has transformed the financial landscape worldwide, including in Kenya. Although there is an increasingly growing body of literature on digital finance in Kenya this review is a relevant and timely topic of research due to the increasing adoption of digital financial services in the country. This paper, therefore, reviewed existing literature on digital banking with a focus on mobile, online and internet banking and their relation to the performance of commercial banks in Kenya. The researchers utilized a significant body of literature focusing on 15 articles concerning select aspects of digital banking on the financial performance of commercial banks. The findings of this paper will be relevant to policymakers, regulators, commercial banks, and other stakeholders in the Kenyan financial sector. Overall, this study contributes to the growing body of literature on the effect of digital banking on the performance of commercial banks in emerging economies, specifically in the context of Kenya. Based on literature reviewed, more research on other digital banking services such as online commodities and currency trading, where commercial banks and other financial institutions have previously dominated, and fintech in Kenya is required.**

Keywords: **digital banking, mobile banking, online banking, electronic payments, commercial banks.**

I. INTRODUCTION

A. Background of the study

The financial landscape in Kenya has witnessed a remarkable transformation over the past decade, with digital banking emerging as a prominent force driving this change. In the wake of technological advancements and the proliferation of mobile devices, digital banking has become a cornerstone of the banking industry. This study seeks to explore the profound implications of digital banking on the performance of commercial banks in Kenya.

Kenya has earned a reputation as a global leader in digital banking innovation. The introduction of the revolutionary mobile money platform, M-Pesa, in 2007 by Safaricom, a leading telecommunications provider, served as a catalyst for the rapid adoption of digital financial services. Today, a significant portion of the population utilizes mobile banking for payments, transfers, and a range of financial transactions (CBK, 2017; Ndirangu & Kimani 2022). This digital shift has not only altered consumer behavior but has also redefined the competitive landscape for commercial banks.

The performance of commercial banks in Kenya has always been closely linked to their ability to adapt to changing market dynamics. Digital banking is a game-changer in this regard. It offers the potential for cost reduction, improved efficiency, and expanded customer reach. Banks have seized the opportunity to invest in digital infrastructure, mobile apps, and online banking platforms to provide customers with convenient and accessible services (CBK, 2017; Kitigin et. al, 2021). As a

result, the nature of banking services has evolved, emphasizing accessibility, speed, and customization (Zeleke & Chauhan, 2022).

One of the key factors driving the adoption of digital banking in Kenya is financial inclusion. A large portion of the population was previously underserved by traditional banking institutions due to factors such as geographical distance, lack of documentation, and costly account maintenance fees (Ssekamanya, 2021; Shaikh & Anwar, 2023). Digital banking has significantly mitigated these barriers, enabling previously excluded individuals to access basic financial services. The enhanced financial inclusion, in turn, affects the performance of commercial banks by increasing the deposit base, expanding the customer pool, and stimulating economic activity.

Furthermore, digital banking has also transformed lending practices. Online lending platforms and credit scoring models have enabled commercial banks to streamline loan approval processes. This not only reduces the risk of non-performing loans but also increases the accessibility of credit to a broader segment of the population. However, this shift requires a careful evaluation of the associated risks and opportunities, making it a crucial aspect of this study's focus.

The performance of commercial banks in Kenya is, therefore, intricately linked to their ability to leverage digital banking tools effectively while managing the potential challenges that come with this transformation. Factors such as cybersecurity, customer data protection, regulatory compliance, and competition from non-traditional financial service providers are all areas where banks must navigate strategically to succeed in this new landscape (Mutua, 2013; Asiimwe, 2019).

Kenya's banking landscape has evolved significantly with the advent of technology, leading to the rise of various banking methods, including mobile banking, online banking, and electronic banking. Each of these methods serves to provide convenient and accessible financial services to the Kenyan populace.

Mobile Banking

Mobile banking, often referred to as m-banking, is a pioneer in Kenya's digital financial revolution. It enables individuals to access banking services through their mobile devices. The most prominent example is M-Pesa, launched by Safaricom in 2007. With M-Pesa, users can perform various financial transactions, including money transfers, bill payments, and airtime purchases. This has greatly enhanced financial inclusion in Kenya, allowing even those in remote areas to access and use banking services. The extensive network of M-Pesa agents across the country has further solidified its presence.

Online Banking

Online banking, also known as internet banking, has become increasingly popular in Kenya. It allows customers to access their bank accounts, make transactions, and manage their finances through secure online portals provided by traditional banks. Customers can check their account balances, transfer funds, pay bills, and even apply for loans from the comfort of their homes or offices. The major banks in Kenya offer online banking services, providing users with a convenient and efficient means of managing their finances.

Electronic Banking

Electronic banking is a broader category that encompasses various forms of digital banking, including mobile and online banking. It involves the use of electronic channels, such as ATMs, point-of-sale (POS) terminals, and electronic fund transfers, to facilitate financial transactions. Kenyan banks have invested in extensive ATM networks, making it easy for customers to withdraw cash, check their account balances, and even deposit funds. Electronic fund transfers, including Real-Time Gross Settlement (RTGS) and Electronic Funds Transfer (EFT), have streamlined interbank transactions and enabled timely money transfers (Mugodo, 2016).

All three of these banking methods have significantly contributed to improving financial access, efficiency, and convenience in Kenya. They have particularly made banking services more accessible to unbanked or underbanked populations, providing them with the means to save, transact, and build financial stability.

Moreover, these digital banking channels have not only benefited individual consumers but have also had a positive impact on businesses (Crowe, 2003; Gibson, 2012; Madugba et. al., 2021; Umugwaneza & Kising'u, 2023). Entrepreneurs and corporations can efficiently manage payroll, supplier payments, and revenue collection through these electronic platforms, thereby enhancing the overall efficiency of financial operations.

These digital banking services have revolutionized the way people access and manage their finances. They have played a pivotal role in increasing financial inclusion, enabling faster and more secure transactions, and supporting economic growth in Kenya (Opiyo, 2021). As the country continues to embrace technological advancements, the future of banking in Kenya is likely to be increasingly digital, making financial services even more accessible and efficient for all.

Financial performance

The concept of financial performance serves as a subjective gauge of a firm's ability to utilize its primary assets to generate revenue. It represents an essential measure of a company's overall fiscal well-being within a given time frame. This measure is particularly valuable for comparing similar firms operating in the same industry or for assessing entire sectors or industries collectively. The CAMEL framework encapsulates key metrics used to evaluate a bank's condition. CAMEL stands for Capital Adequacy, Asset Quality, Management, Earnings, and Liquidity.

Electronic banking products and services have emerged as a critical driver of efficiency and effectiveness within banks. They enable the swift and convenient processing of a higher volume of transactions, thereby significantly influencing overall bank performance (Ali, 2018; Ouma & Ndede, 2020)). However, there is an ongoing debate regarding the extent to which the adoption of digital banking financial services improves bank performance. The use of these technologies necessitates complementary investments in skills, organizational restructuring, and innovation, which come with associated risks and costs, alongside potential benefits.

Research indicates positive impacts of e-banking on bank turnover and profitability, with additional benefits in terms of employment, particularly when e-commerce is strategically integrated into a bank's operations (Asiimwe, 2019; Ouma & Ndede, 2020). Digital banking also contributes to enhance bank performance by facilitating increased market share, diversification of product offerings, customization of products, and better responsiveness to client demands. Importantly, digital banking continues to reshape the landscape of banking activities and income structures. Traditional retail banking activities are increasingly influenced by modern or conventional developments, particularly in the realm of remote banking.

In conclusion, this study will delve into the effect of digital banking on the performance of commercial banks in Kenya. By comprehensively examining existing literature, it aims to contribute to a deeper understanding of the evolving financial landscape in Kenya. Moreover, it will offer insights into how commercial banks can harness the potential of digital banking to enhance their performance while addressing the associated risks in a rapidly evolving financial ecosystem.

B. Research Problem

The banking landscape in Kenya has witnessed a significant shift towards enhanced digitization and the promotion of e-banking services. Commercial banks have actively embraced this transformation with the objectives of expanding their network base, reducing personnel costs, maintaining competitive advantages in the industry, and enhancing overall performance. However, it's worth noting that this heightened digitization has not been without challenges.

Some banks have experienced a drop in performance, necessitating regulatory intervention, such as being placed under statutory management or even closing down (Abbasi & Weigand, 2017; Bonface & Ambrose; 2015). This underscores the complexities and risks associated with the rapid adoption of digital banking.

On the positive side, robust e-banking platforms have enabled banks to introduce agency and digital banking services, allowing customers to conduct various banking transactions through third-party agents (CBK, 2016; CBK, 2017; Ali, 2018). This approach has expanded the reach of banking services and offered convenience to customers.

However, it's important to recognize that there are potential challenges associated with this shift to non-branch banking. Concerns about the risk of reduced transactional income for banks due to the cost-effectiveness of these digital services compared to traditional banking hall fees (Kithaka, 2014; Ndirangu & Kimani, 2022). Increased competition in this space might further drive down income.

Digital banking has disrupted the performance of commercial banks in several fundamental ways whereby their revenue share is gradually shifting from traditional channels of banking, where immense resources had been allocated, to more conventional channels, key among them being digital banking services and more so mobile banking. Traditional revenue streams, such as fees for branch services and check processing, have diminished due to digital banking (Madugba et. al., 2021; Zeleke & Chauhan, 2022). Commercial banks have had to diversify their sources of revenue, often by offering fee-based services or investing in wealth management and advisory services (Usman, 2020).

Digital banking has streamlined various banking processes, reducing the need for extensive physical infrastructure and manual operations. This has led to the closure of more physical branches and restraint in opening new ones even in areas where the population has surged. This has in turn demanded for improved operational efficiency for commercial banks. Traditional tasks, such as account management and transaction processing, can now be handled with greater speed and accuracy through automated digital systems.

With the advent of digital banking, customers expect 24/7 accessibility and convenience, customer expectations have prompted commercial banks to invest in user-friendly mobile apps and online platforms (Nwekpa et. al., 2020; Oluwafemi et .al, 2022). Meeting these expectations is crucial to retaining and attracting customers, but it also requires significant investments in technology and cybersecurity. This has also brought about challenges in the adoption of digital banking.

Digital banking has also lowered the barriers to entry in the financial industry, enabling fintech startups to compete with established banks. These newcomers often offer innovative, specialized services that can challenge traditional banks' market share. Commercial banks need to adapt and innovate to remain competitive.

With the digitization of banking, the risk of cyberattacks and data breaches has increased significantly. This has led to an increase financial crime in the banking sector (Zhu et. al., 2020; Valdez & Castillo, 2020). Commercial banks must allocate substantial resources to enhance their cybersecurity measures, which can impact their performance in terms of expenses and the need for constant vigilance.

The adoption of digital banking technologies has necessitated adherence to new and evolving regulatory frameworks. Ensuring compliance adds complexity and costs to operations and can impact banks' overall performance (Ssekamanya, 2021; Oluwafemi et .al, 2022).

One point raised in this context is the scarcity of documentation and research on the effects of digital banking on the financial performance of commercial banks in Kenya. The available literature does not provide a clear understanding of how the utilization of digital banking has influenced the performance of these banks. This research gap prompted the study to investigate and address this important issue, contributing to a more comprehensive understanding of the impact of digital banking on the financial performance of commercial banks in Kenya.

In summary, digital banking has disrupted commercial banks by reshaping their operational models, heightening customer expectations, introducing new competitors, promoting financial inclusion, increasing cybersecurity concerns, necessitating revenue diversification, and requiring compliance with evolving regulations. To thrive in this digital era, commercial banks must navigate these challenges while leveraging the benefits of digitalization to enhance their performance and competitiveness.

C. Objectives of the study

The general objective of this study was to examine the effect of digital banking on the performance of commercial banks in Kenya.

The specific objectives were:

1. To establish the effect of mobile banking on the performance of commercial banks in Kenya.
2. To determine the effect of internet banking on the performance of commercial banks in Kenya.
3. To establish the effect of electronic banking on the performance of commercial banks in Kenya.

D. Significance of the study

Understanding the impact of digital banking on the performance of commercial banks is crucial for policymakers, banking executives, investors, and researchers in the financial industry. As Kenya serves as a hub for financial innovation in Africa, the findings of this research will contribute to the broader discourse on the implications of digital transformation for emerging markets. Additionally, the study's insights will assist commercial banks in formulating effective strategies to leverage digital banking platforms to their advantage.

The study's scope extends to the state of mobile money services, which pose a formidable challenge to commercial banks in Kenya. By investigating the factors that have significantly influenced the growth of mobile money services, the study is

expected to provide invaluable insights. Financial institutions and telecommunications industry players can leverage these findings to formulate strategies that facilitate mutually beneficial collaborations in this rapidly evolving landscape.

Ultimately, the study contributes to the body of existing literature on mobile, online and electronic banking, serving as a valuable resource for students, academicians, institutions, corporate managers, and individuals interested in deepening their knowledge of these banking innovations. The insights and knowledge generated from this study have the potential to shape the future of banking and financial services in Kenya and beyond, making it an indispensable reference for a diverse audience with a stake in the financial and technological spheres.

II. LITERATURE REVIEW

A. Theoretical literature

Digital finance theories refer to conceptual frameworks and ideas that explain the various aspects of finance in the context of digitalization and technological advancements. These theories provide insights into how technology, particularly digital technology, has transformed and continues to shape the financial industry. Some of the prominent digital finance theories relevant to this study were discussed.

Disintermediation theory

It refers to the process by which traditional intermediaries, such as banks, are bypassed or minimized in the financial transactions between end-users, typically individuals or businesses. This theory becomes highly relevant when considering the impact of digitalization on the financial industry.

In the Kenyan and global financial landscape, digital banking has been a catalyst for disintermediation. Digital banks, often operating exclusively online, have disrupted the traditional banking sector by offering a wide range of financial services directly to customers (Koch & Siering, 2017). These services include savings and checking accounts, loans, investments, and payment processing. Customers can access these services through mobile apps, websites, or other digital platforms, eliminating the need for a physical bank branch and face-to-face interactions.

This phenomenon is closely tied to the disintermediation theory because digital banking platforms have effectively reduced the reliance on traditional banks as intermediaries in financial transactions. Customers can manage their finances and conduct transactions with reduced fees, quicker processing times, and enhanced convenience. Furthermore, disintermediation through digital banking has the potential to promote financial inclusion, as it reaches underserved populations who may not have easy access to physical banking infrastructure.

The shift towards digitalization and the subsequent disintermediation have important implications for the financial sector and warrant in-depth analysis to guide policy and industry adaptation in Kenya and beyond.

Digital transformation theory

This theory emphasizes the strategic utilization of digital technologies to revolutionize traditional banking practices, making them more efficient, customer-centric, and technologically adept. The primary aim is to stay competitive in an increasingly digital landscape (Koch & Siering, 2017; Shaikh & Anwar, 2023).

In the sphere of digital banking, the theory of digital transformation encompasses various key elements. First, it involves the adoption of advanced technologies such as mobile apps, online platforms, and AI-driven tools to enhance customer experiences. Digitalization simplifies account management, payment processing, and access to financial services. Moreover, it allows for real-time data analysis, enabling banks to make data-driven decisions, manage risks, and create personalized financial solutions for clients.

Security is another vital facet of digital transformation theory, especially in banking, where the protection of sensitive financial data is paramount. Banks must invest in robust cybersecurity measures and comply with stringent regulations to safeguard customer information.

Furthermore, the theory underscores the need for cultural shifts within organizations. Banks must foster a culture of innovation, encouraging employees to adapt to digital changes and continuously upgrade their skillsets. This entails providing training, promoting digital literacy, and incentivizing employees to embrace technology.

Open banking theory

Open banking is a concept that emphasizes transparency, innovation, and customer empowerment within the banking industry. It entails financial institutions opening up their data and systems to external parties, typically through Application Programming Interfaces (APIs). In a digital banking context, this is crucial as it allows customers to have greater control over their financial data and promotes competition by enabling third-party financial service providers to build applications and services that can seamlessly interact with a customer's bank accounts (Tchouassi, 2012; Valdez & Castillo, 2020; Zhu et. Al., 2020).

The underlying principle of open banking theory is to foster a more interconnected and customer-centric financial ecosystem. Digital banking, being inherently technology-driven, is a natural fit for open banking, as it relies on data sharing and real-time transactions. This symbiotic relationship has given rise to innovative financial services and products, including personalized budgeting tools, peer-to-peer payment apps, and even robo-advisors, which enhance the overall customer experience in the digital realm (Tchouassi, 2012; Usman, 2020).

Open banking in digital banking is not without challenges, however. Security and privacy concerns, regulatory compliance, and the need for standardized data formats are issues that need to be addressed. Nonetheless, it represents a transformative shift in the financial sector, bridging the gap between traditional banking and the digital age, and holds immense potential for academics like you to explore and understand the implications, challenges, and opportunities in the ever-evolving landscape of finance.

B. Empirical literature

DeYoung's (2015) analysis delved into the performance of Internet-only banks in comparison to traditional brick-and-mortar banks in the US market. His research provided compelling insights into the dynamics of the banking industry. DeYoung discovered strong evidence of general experience effects that were accessible to all banking start-ups. However, he found limited evidence to suggest that technology-based learning significantly accelerated the financial performance of Internet-only start-ups. In fact, his study indicated that pure-play (Internet-only) banks in the US market tended to exhibit lower profitability.

Their findings suggested that internet banking had a positive effect on bank profitability, primarily driven by an increase in revenues from deposit service charges. Brick-and-mortar banks also witnessed shifts in deposit behavior, with deposits moving from checking accounts to money market deposit accounts. Additionally, there was an increased use of brokered deposits and higher average wage rates for employees in these banks. These studies illuminate the complex relationship between technology adoption, bank profitability, and the impact on traditional and online banking models. DeYoung's research provided valuable insights into the nuances of the banking industry, where various factors and strategies can yield diverse outcomes for different types of banks.

The study conducted by Furst, Lang, and Nolle (2012) sheds light on the relationship between the adoption of internet banking and bank profitability. According to their findings, banks utilizing the "click and mortar" business model, which combines physical branches with online banking services, exhibited higher Return on Equity (ROE).

Additionally, the research explored the factors influencing the adoption of internet banking. Furst, Lang, and Nolle observed that more profitable banks tended to adopt internet banking after 1998, even if they were not among the first movers in this domain. This suggests that profitability played a role in influencing the timing of internet banking adoption, with more profitable banks embracing this technology in the later stages of its development. The study's results highlight the financial benefits associated with the click-and-mortar model and underscore the dynamic nature of the banking industry, where profitability is a key driver of technology adoption and adaptation.

Okiro and Ndung'u's study in 2013 was a comprehensive assessment of the impact of mobile and internet banking on the performance of financial institutions operating within Nairobi. Their research also aimed to gauge the extent of adoption of mobile and internet banking technologies among these institutions. The findings of their study revealed intriguing patterns within the financial services landscape in Nairobi. Commercial banks emerged as the leaders in internet banking usage among the sampled financial institutions. They exhibited the highest rate of adoption and utilization of internet banking services. This suggests that commercial banks were at the forefront of incorporating digital banking technologies to enhance their operations and cater to their customers' evolving needs.

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In contrast, SACCOS (Savings and Credit Cooperative Societies) were found to be gradually embracing internet banking. This indicates that SACCOS were in the process of incorporating digital banking into their service offerings, albeit at a slower pace compared to commercial banks. Microfinance institutions, however, had not yet adopted internet banking technology at the time of the study. This lack of adoption reflected the varying stages of digital banking incorporation among different types of financial institutions in Nairobi. The study's results illustrate the dynamic nature of financial services in the region, with commercial banks taking the lead in embracing internet banking, while other financial institutions were at different points in their digital transformation journey. These findings offer insights into the evolving landscape of financial services and the diverse approaches taken by various institutions in adopting digital banking technologies.

Mwangi's research (2014) focused on assessing a bank's financial performance with the aim of determining whether electronic banking contributed to increased efficiency and effectiveness, particularly in terms of cost minimization and time savings. The study relied on profitability indicators to evaluate management efficiency, including the use of the return on assets ratio. The return on assets (ROA) ratio is a financial metric that measures net income in relation to total assets. It provides insights into how effectively a firm utilizes its assets to generate income. Mwangi's research found that the adoption of electronic banking led to reduced costs, primarily due to a decrease in the number of bank staff. Importantly, this reduction in operational costs contributed to increased profitability for banks.

Furthermore, the study highlighted a shift in how banks operate, emphasizing self-service channels enabled by electronic banking. This transformation marked a departure from traditional banking channels that heavily relied on human assistance, such as tellers and corporate management. Electronic banking brought about a more efficient and cost-effective model for delivering banking services, aligning with the self-service trend in modern banking.

Bonface and Ambrose’s research (2015) shed light on the significant transformation brought about by e-banking services. They note the substantial changes in the customer transaction process prior to the adoption of e-banking, highlighting the lengthy and somewhat cumbersome nature of traditional banking. Before e-banking became commonplace, customers would have to physically carry their cash to the bank branch. At the branch, they often endured long queues, and the process involved manual counting and recording of cash by tellers in the customer's account. This traditional process not only consumed a significant amount of time but also exposed customers to security risks associated with carrying cash.

E-banking services, in contrast, revolutionized this process. Customers could conveniently deposit money directly from their mobile devices into their respective bank accounts, eliminating the need for physical visits to bank branches. One interesting aspect of Bonface and Ambrose’s study is their focus on the benefits of e-banking services for commercial banks and other e-banking service providers. While many studies have primarily emphasized the advantages of e-banking for customers, their research aimed to uncover the benefits experienced by the institutions offering these services. Moreover, their study identified a notable gap in the existing literature. While many studies have explored the benefits of e-banking in terms of turnaround time and convenience for customers, there was limited information regarding the impact of turnaround time on the financial performance of commercial banks. This research gap underscores the need for a more comprehensive understanding of how e-banking, particularly in terms of transaction speed and efficiency, can affect the bottom line of commercial banks.

Agboola's study in 2006 on Information and Communication Technology (ICT) in banking operations in Nigeria provided significant insights into the impact of innovative technologies on the banking industry. Agboola assessed the nature and extent of the adoption of these technologies, their utilization, and the resulting impact on banks. One of the key findings of Agboola's research was that technology emerged as the primary driving force of competition within the banking sector. During his study, he observed a notable increase in the adoption of various ICT solutions, including ATMs, Electronic Funds Transfer (EFT) systems, smart cards, electronic home and office banking, and telephone banking. This widespread adoption of ICT positively influenced the image of banks and contributed to a broader, faster, and more efficient market.

Agboola emphasized the necessity for bank management to intensify their investments in ICT products. This, he argued, was crucial to enhance the speed, convenience, and accuracy of services provided by banks. Failing to do so, he warned, would result in losing ground to competitors in an increasingly technology-driven and competitive landscape. His study underscores the critical role of ICT in shaping the banking industry and highlights the imperative for banks to embrace and invest in these technologies to remain competitive and meet the evolving demands of customers.

Kumar and Pandey (2023) noted that the last decade has witnessed a significant and rapid shift towards the adoption of e-banking services. However, despite this transformative shift, the impact of e-banking on the overall performance of banks has received limited attention. This suggests that the relationship between e-banking and bank performance remains a relatively unexplored area of study. As the deployment of e-banking technology becomes more widespread, there is a growing interest in gaining a deeper understanding of how the adoption of e-banking influences the performance of commercial banks. Researchers are increasingly focused on uncovering the various dynamics at play in this context.

Ogare's investigation (2013) provided valuable insights into the impact of information technology on banks' financial performance, particularly in the context of electronic banking. Despite the recognized potential of information technology to enhance financial performance, Ogare's research highlighted several challenges associated with its implementation. One of the central challenges was the high costs incurred during the implementation of information technology in the banking sector. This aspect underscores that while technology can improve efficiency and profitability, the initial investment can be substantial. Additionally, Ogare noted a significant obstacle to financial security in e-banking due to the prevalence of fraud. This security concern had led to a decrease in the number of users, which, in turn, could potentially reduce bank profits.

Several challenges were identified in e-banking, including increased costs, security issues, and the need for adequately skilled personnel. These challenges, when not effectively addressed, can have a negative impact on bank profitability. E-banking is an innovative approach in the banking industry that leverages the internet and telecommunication networks to offer banking services and products. Key components of electronic banking include internet banking and electronic funds transfer, which have reshaped the way bank transactions are conducted by allowing customers to perform these transactions without visiting physical bank branches. Ogare's research highlighted both the potential benefits and the hurdles associated with this transformative technology in the banking sector.

According to Ritu and Pandey (2023), the effect of e-banking on bank performance is not a settled matter and remains the subject of ongoing debate. The multifaceted nature of this issue, the evolving landscape of e-banking, and the diverse strategies and technologies employed by banks all contribute to the complexity of this relationship. These observations highlight the need for continued research and analysis to elucidate the intricate relationship between e-banking adoption and the financial performance of commercial banks. Gaining a more comprehensive understanding of this dynamic is essential as banks continue to adapt to the evolving digital financial landscape.

Opiyo's (2021) delved into the impact of digital financial services on financial performance, employing descriptive and correlation analysis techniques. The findings of this study yielded valuable insights into the relationship between digital financial services and the financial performance of banks. The research identified a strong and significant positive correlation between mobile financial services and financial performance. This correlation suggests that as the utilization of mobile financial services increased, financial performance improved substantially. Mobile financial services, which often include mobile banking and payments, have proven to be highly influential in enhancing the financial performance of banks.

Additionally, Opiyo's study highlighted a moderate but still significant positive correlation between online financial services and financial performance. This correlation suggests that while online financial services positively influenced financial performance, the impact might not be as pronounced as that of mobile financial services. Online financial services typically encompass services delivered through web platforms and applications. In summary, Opiyo's research provided empirical evidence of the positive relationships between digital financial services and financial performance for banks. It underscored the transformative role of mobile and online financial services in shaping the financial landscape and contributing to improved financial outcomes for financial institutions.

Wadesango and Magaya's (2020) analysis focused on assessing the impact of digital banking services on the performance of commercial banks in Zimbabwe. To conduct their investigation, the researchers employed a multiple regression model, with performance measured using the Return on Assets (ROA) ratio. The results of their study unveiled several key findings. Notably, there was a positive relationship between Return on Assets and digital banking. This means that an increase in online customer deposits and online banking transactions corresponded to an increase in the Return on Assets, indicating that digital banking services had a positive effect on bank performance in terms of asset utilization and profitability.

However, the research also uncovered a negative relationship between Return on Assets and two factors: internet banking fees and commissions, as well as expenditure on internet banking. This suggests that as internet banking fees and commissions increased, and as banks spent more on internet banking infrastructure and operations, the Return on Assets decreased. This negative relationship highlights the need for banks to carefully manage their digital banking-related costs to ensure that the benefits of these services outweigh the associated expenses. In summary, Wadesango and Magaya's study

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provided valuable insights into the interplay between digital banking services and the performance of commercial banks in Zimbabwe. It underlined the potential for increased profitability through digital channels while emphasizing the importance of cost management in optimizing the impact of these services on financial performance.

Aduda and Kingoo's (2012) study in Kenya focused on investigating the relationship between e-banking and the performance of the Kenyan banking system. Their research specifically explored the link between investments in e-banking, the number of ATMs, the number of debit cards, and the performance of banks, as measured by the return on assets (ROA).

The findings of their study revealed a strong and significant positive relationship between e-banking and returns on assets in the Kenyan banking industry. This indicates that investments in e-banking have a favorable impact on the financial performance of banks, as reflected by their return on assets. In other words, there is a positive correlation between the adoption of e-banking services and enhanced bank performance in Kenya. These results suggest that e-banking technologies not only provide convenience and accessibility for customers but also contribute to the financial success of banks. As a result, the study's findings advocate for banks to continue investing in e-banking solutions as a means of bringing their services closer to customers, ultimately improving their overall performance. This research provides valuable insights into the positive impact of e-banking on the banking sector in Kenya.

Arnaboldi and Claey (2014), compared the performance of various online banking models in Finland, Spain, Italy, and the UK over the period 1995-2004, revealed compelling insights. Their research indicated that internet banks outperformed traditional banks in terms of average returns to assets or equity. Surprisingly, these online banks did not appear to incur higher operational costs relative to the income they generated. The study offered an explanation for the performance of banks based on a selection of specific bank-related features. It also factored in country-specific macroeconomic indicators and ratios related to information technology. The findings challenged the conventional notion that internet banks would inherently have higher operational costs; instead, they demonstrated the potential for cost-efficiency in this model.

Arnaboldi and Claeys also noted that banks primarily focusing on deposits might miss out on more lucrative banking activities. Customers interested in value-added products still seemed to prefer interactions with physical branches. Therefore, internet banks needed to reach a certain minimum scale to become profitable. Their study underscored the idea that online banking, as a process innovation, is significantly influenced by external factors beyond the banking industry. These factors include the percentage of households with internet access at home, a higher broadband penetration rate, and increased investment in research and development employment. These external factors were found to positively influence the performance of internet banks, highlighting the interconnected nature of technological innovation, customer access, and banking performance.

Kumar's (2010) study on Micro Finance and Mobile Banking sheds light on the potential cost savings for financial institutions through the adoption of mobile banking (m-banking) services. This technological innovation offers a range of benefits for both banks and their customers. The study highlights how financial institutions can significantly reduce their operating costs by leveraging m-banking services. For instance, the use of automatic text messages to notify customers about upcoming payments, loan disbursements, and late payment warnings can save loan officers time and reduce phone bills. As operating costs decrease for banks, this cost-saving effect can extend to customers, who may experience reduced fees and expenses.

Additionally, customers benefit from m-banking by saving on travel costs, especially in cases where bank branches are located in urban areas, necessitating long journeys from their homes or business premises. This convenience is a significant advantage of m-banking, particularly in regions with limited access to physical bank branches. However, Kumar's study acknowledges some of the challenges and costs associated with implementing m-banking. Developing the necessary technological infrastructure for m-banking can be a time-consuming and expensive process. Financial institutions need their existing banking software to be integrated with an m-banking platform, which often requires a significant investment in both time and financial resources.

One noteworthy observation in the broader context of research on the cost of m-banking is that many studies, with the exception of Kumar's work, have not thoroughly explored the net effect of these costs on the income of commercial banks. While the benefits of cost reduction for customers and increased convenience are evident, the financial impact on the banks themselves remains somewhat unclear. Kumar's work, while valuable, also doesn't provide a definitive answer regarding whether the costs of operating m-banking services ultimately raise or lower the net income of commercial banks. The focus in much of the research has been on the customer benefits and cost savings, leaving room for further examination of the financial implications for the banks.

In summary, the recent literature has exhibited a tendency to oversimplify the concept of online banking and money, sometimes treating them as mere substitutions for physical currency. However, deeper examination, as undertaken by various models and authors, reveals the potential for internet-based financial systems to flourish and even operate independently from traditional central banking structures. As digital technologies continue to advance, these alternative systems may play an increasingly prominent role in the future of financial services and commerce.

III. METHODOLOGY

An initial comprehensive literature review identified 45 articles focusing on the subject of digital banking financial services, and the performance of commercial banks. The research process consisted of two review phases, commencing with an overarching exploration of literature concerning digital banking by the research team. Subsequently, the findings from this initial review were meticulously scrutinized and organized into distinct categories, including mobile banking, online banking, electronic banking, and the financial performance of financial institutions.

To further refine the review, the researchers delved into the literature from a selection of 15 articles specifically focusing on digital banking within the context of developing countries, such as Kenya. This thorough examination drew from a variety of scholarly sources, including academic websites, repositories, and reputable journals to compile a comprehensive collection of articles and e-books.

IV. CONCLUSION AND FINDINGS

The primary focus of our study centered on evaluating the influence of mobile, online, and electronic banking on the financial performance of commercial banks in Kenya. However, it becomes increasingly apparent that the persistent growth of these technologies carries implications that extend beyond individual institutions, impacting the broader economy as well. This realization highlights the pressing need for a comprehensive investigation into the repercussions of mobile, online, and electronic banking on the overall economy.

One notable revelation stemming from our study pertains to the contrasting rates of adoption between mobile and internet banking. Mobile banking exhibited a notably swifter adoption rate than its online counterpart. This stark disparity raises pertinent questions and beckons for further exploration. Consequently, it is imperative to embark on a dedicated research initiative aimed at uncovering the underlying factors contributing to this variance in adoption rates between mobile and online banking.

However, despite the vast amount of literature on select digital banking channels, several recent developments in the field, that would also be considered disruptive to the performance of commercial banks is still very limited. There is little to no literature in Kenya on areas such as fintech, digital financial instruments, online money transfers using non-bank institutions and third party applications (such as peer-to-peer payments), digital wallets (such as Google Pay and Apple Pay) and block chain technology among others.

These additional studies would contribute significantly to a more comprehensive comprehension of the dynamic relationship between financial technologies and their multifaceted impacts. They not only promise insights into the broader economic consequences but also offer specific understandings of the driving forces behind the adoption of distinct digital banking channels. Such research endeavors hold pivotal significance for policymakers, financial institutions, and the entire financial ecosystem, as they seek to adapt and harness the full potential of these technological advancements while effectively navigating the unique challenges they present.

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