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Digital transformation and adoption of mobile banking in the banking sector of African countries

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Abstract:

Over the past decades, global financial systems have achieved greater resilience and stability, even as they continue to face persistent challenges such as market concentration, high operational costs, intense competition, and limited access to financial services. In the African context, progress has also been recorded through regulatory reforms, institutional improvements, and technological advances. However, despite these developments, the indicators of financial development remain below expectations when compared to other developing regions.

This article seeks to provide an in-depth analysis of the determinants influencing the adoption of mobile banking in Africa. The study pays particular attention to the perceptions of two critical groups: bank employees, who are at the forefront of service delivery, and customers, whose trust and usage determine the success of innovation. By examining both the barriers—such as regulatory constraints, infrastructure gaps, and cultural resistance—and the drivers—including accessibility, convenience, and technological opportunities—the paper highlights the complex dynamics shaping financial inclusion.

The analysis is situated within an African environment characterized by rapid economic transformation, growing internet penetration, and strong demand for innovative financial solutions. Ultimately, the objective of this research is to identify the conditions under which mobile banking can evolve into a sustainable model that supports wider financial development and inclusion across the continent.

Keywords: Banking performance – Mobile solutions – Adoption – Employees – Clients – Fintech.
JEL code: G21, O33, L86, O55
Paper Type: Theoretical Research

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1. Introduction

At both the country and company level, analyses reveal that the determinants of banking system development in Africa diverge significantly from those in other regions of the world. Unlike in many emerging economies, the conventional quality indicators of macroeconomic management do not exhibit strong correlations with financial development on the African continent. While institutional development indicators do show a positive relationship with financial deepening, this correlation is considerably weaker than in other developing regions. This observation highlights the structural challenges Africa faces in reaching a viable threshold of financial scale in sparsely populated, low-income environments. At the same time, it underscores the strategic importance of innovative distribution channels—such as digital and mobile technologies—in fostering financial inclusion and bridging the accessibility gap.

Although the majority of African banking systems remain underdeveloped, significant progress has been recorded during the past decade. These advances, only partially visible through aggregate statistical data, are the outcome of several decades of incremental regulatory reforms. Improvements in supervision, prudential regulation, and institutional frameworks have strengthened the stability and resilience of African banking systems, laying the groundwork for broader financial development. Financial innovation, in particular, has played a transformative role by enabling a growing share of the population to gain access to basic formal financial services, thereby reinforcing the foundations of inclusion.

The role of technology is especially crucial in this context. Digitalization offers African financial systems the opportunity to complement traditional modes of service delivery—branch networks, teller-based operations, and paper-based procedures—with mobile, internet, and agent-based alternatives that are faster, cheaper, and more inclusive. Mobile money and mobile banking solutions have emerged as powerful innovations, allowing millions of individuals and small businesses to access transactional and savings services through their mobile phones. However, such innovative approaches do not flourish in isolation. Their success requires an enabling environment characterized by effective competition, robust infrastructure, and a flexible regulatory framework capable of adapting to technological advances while ensuring stability and consumer protection.

This duality—between opportunity and constraint—forms the backdrop of the present study. The central research problem can be formulated as follows: What are the determinants of the adoption of mobile banking in the African banking sector? This question is of critical importance, as it not only addresses the future of financial innovation in Africa but also raises broader concerns about equity, inclusion, and sustainable economic growth.

From this perspective, the objective of this article is to assess whether mobile banking can develop as a viable payment and financial service method across African economies. More specifically, it seeks to identify and analyze the key determinants of mobile banking adoption and to evaluate its impact on financial systems and users. To this end, the study combines theoretical insights with qualitative evidence from actors directly involved in the African financial ecosystem—ranging from regulators and banking institutions to telecom operators and end-users.

The general context of Africa's banking systems helps situate this analysis. Historically, financial systems across the continent were dominated by state-owned banks and heavily constrained by restrictive regulations during the 1980s. Since then, a process of financial liberalization, regulatory modernization, and globalization has triggered important transformations (Fox & Van Droogenbroeck, 2017). Despite these reforms, the overall level of financial development in Africa remains low compared to other developing regions, and even lower than what structural fundamentals might suggest.

Research by Allen et al. (2012), using cross-country regressions, reveals that financial development in Africa behaves differently from that in other emerging economies. The most striking difference lies in population density, which emerges as a much stronger determinant of financial development in Africa than elsewhere. Population distribution is closely tied to bank branch penetration, transaction costs, and ultimately, the ability of firms and households to access external financing. In regions with low density, banks struggle to justify costly branch networks, leading to persistent gaps in service coverage.
This structural limitation is where financial innovation becomes indispensable. As Mishra and Singh Bisht (2013) emphasize, innovative delivery channels such as mobile platforms have made it possible to extend financial access to previously excluded groups, bypassing the constraints of geography and traditional infrastructure. In this sense, technology is not merely an add-on to the existing system but a potential game changer.
Yet, realizing this potential requires more than technological adoption. It necessitates the development of a competitive financial ecosystem, effective coordination between telecom operators and banks, and regulatory frameworks that are both protective and adaptive. The challenge for policymakers is to strike a delicate balance: promoting innovation and inclusion while maintaining financial stability and trust.
In light of these dynamics, this article contributes to the literature by providing a focused analysis of the determinants of mobile banking adoption in Africa, highlighting both the opportunities it offers and the constraints it faces. By doing so, it aims to shed light on whether mobile banking can serve as a catalyst for broader financial development and inclusion on the continent, or whether structural and institutional challenges will continue to limit its transformative potential.

2. Literrature Review

Technology is the most critical factor in the banking process because banking is a digital business. It is a transactional business based on numbers. If we were to draw an analogy, the telecommunications sector would certainly be the closest, with the main difference being that banks connect finance while telecommunications connect society (Skinner, 2007). In addition, technology has changed drastically. So much so that today there are no longer any possible doubts about the emergence of a true information society. Rapid and universal communication is trivialized, and new means of communication are inexorably taking hold in people's lives. Faced with this revolution in new information and communication technologies, the banking sector must therefore adopt new strategic measures to comply with this changing world. Over the past decades, a number of innovations and technological revolutions have taken place in the banking industry. Briefly, we find among others: the computerization and automation of the banking sector and the digitization of all banking production processes.

2.1.Development of the banking sector

Today's world is characterized by a digital transformation representing one of its most important "drivers". In perpetual evolution, we are witnessing a real revolution introduced by companies such as Apple, Google, Facebook and Microsoft. In 2010, 5 billion devices connected to the Internet were listed by an IMS Research study and reported by Le Monde Informatique. And more than 20 billion are envisaged in 2020. This revolution is now firmly anchored in our daily lives and its impact is increasingly strong on the way in which we, as consumers, we approve information, advertising and therefore brands. According to Forrester analyst Martin Gill, online shoppers continue to view Internet shopping as convenient, affordable and offering a wide choice. according to the same study, 7% of sales in the United States are made online with an expected growth of 2% by 2016 and 40% of offline sales are directly influenced by researching information in advance on the web. In France, the same trend is observed, in fact,

Forrester predicts that 76% of French Internet users will regularly shop online in 2016. In total, therefore, almost half of global sales on which digital has an impact. direct or indirect. In view of this observation and the certain growth and boom that e-commerce will experience, it is obvious that digital transformation is becoming a major issue for companies.
As a result, economies in Africa appear to be going in the opposite direction of the rest of the globe. A lucrative market for investment, combined with increasing economic prosperity are contributing to growth in a number of industries where other economies appear to be struggling; one example of which is the banking sector. According to a new study from global management consultancy McKinsey & Company, the African banking sector is significantly outperforming the global banking industry. The return on equity (ROE) for the global banking industry has been fluctuating between 8% and 10% over the last seven years.
New technologies are presented as the main change of our era and their appropriation by companies appears inevitable. In a world where competition is increasingly fierce, these new technologies allow companies a certain differentiation. Their integration into the company will provide the latter with measurable efficiency and better performance thanks to the calculation of the ROI (return on investment). Indeed, digitization increases the profitability of the company by 26%: it allows the simplification of processes and interactions thanks to their automation. As a result, the issue of digitization is emerging as a strategic imperative in all companies in all sectors. This transformation may concern products, services, operations, employee working methods or even customer service. In addition, digitization can perfectly meet the reputation aspirations of the company. It’s a quick and efficient way to show off and grab the consumer's attention. The challenges of this transformation are manifold and certain aspects of the company have to be modified: its strategy, its organization, its technology, etc. The management of the new organization must allow employees to increase their skills by integrating people specializing in digital technology without disrupting existing internal relationships. From a strategic point of view, digital will open up new opportunities for the company which will have a direct impact on its customer relationship, which will also transform its business model. We can therefore say that the inclusion of these changes within the company requires a change management strategy and special management capacities.

2.2. The digital transformation of banks and the influence of digital technologies

Organizations still don't understand what digital means: Some still see it as just an extension of IT or marketing, and organizations rarely take the holistic approach necessary for digital success. The fundamental digital misunderstanding prevents many companies from connecting their digital strategies to their core business. Before examining the digital transformation of banks, it is important to understand exactly what "digital" means. There are several definitions, but we will retain that of McKinsey which states that digital is less about a process and more about the way companies run their business (Dorner K. and Edelman D., 2015).
According to the Accenture Strategy study, "The Growth Multiplier (2016)", the digital economy already represents 22.5% of the world economy, but could reach 25% by 2020 (share of the digital economy in the GDP). However, this same study asserts that the volume of investment is only one factor among many. The decisive factors would be at the level of an appropriate adjustment of the digital mix, between a focus on talents, the development of technological potential and particular attention to digital accelerators (a favorable legal and cultural environment). Fintechs focus on niche markets while GAFAs use their brand image and technological power to enter markets such as mobile payments or data mining (BIG DATA). Fintechs are positioned on specific links in the value chain of the financial sector: means of payment, money transfer, currency exchange, credit to individuals and businesses, etc. This concentration strategy makes it possible to avoid direct competition with traditional banks, but their arrival increases the competitive pressure in the banking market. Today, they

place themselves as an intermediary between banks and customers, but there is still the risk that these new entrants will take control of the central relationship. This optimal knowledge of the customer could thus allow Google to offer a car loan to an Internet user who has just carried out a research on the purchase of a vehicle in his search engine.
Regardless of industry, the primary trend of digital transformation is the integration of computer technologies, and Statista shows us that this trend will only grow.
Likewise, regarding to predictive marketing analyzing weak signals emitted by Facebook users, Facebook will also be able to offer consumer credit even before they have moved. Finally, Amazon, an e-commerce giant, is starting to experiment with loans to SMEs on the European market. Fintechs could therefore reduce the results of traditional banks in the future. This is what the McKinsey firm demonstrates, “retail banks could lose the equivalent of 30 to 35% of their operating results.” On the other hand, in a world hitherto very little banked, 70% of adults in sub-Saharan Africa still do not have a bank account, mobile telecom operators have been able to use their proximity to the customer and capitalize on mobile terminals, whether they are basic telephones called "Feature phones" to offer a whole range of services. mobile banking services panel.
The uses of mobile money have evolved, moving from transactional operations (cash in and cash out, payment of bills, payment of salaries, bank to mobile transfers, etc.) to advanced financial services involving an entire ecosystem. And supported by increasingly developed digitization. The evolution of the market began with the arrival of online banking, and today, FinTech and mobile banking. With the plurality of players, each brand tries to stand out by offering services as efficient as each other. “Mobile banking”, also called “m-banking” or remote banking, is a natural evolution of local banking towards a solution that is faster, more practical and within reach. The development of "mobile banking" started in Germany before reaching France and the United States. But it was Africa that adopted these banking solutions the fastest in light of the growing needs of the local population.
At this level, if neo-banks succeed in attracting customers of traditional banks, it is because they offer a simple, intuitive, often 100% mobile customer journey. With the unparalleled success of the Smartphone, it's no wonder that mobile banking has emerged. These mobile banks also offer very attractive rates since many of their services are free.

2.3.Banking and virtual banking world

Before determining whether there are still opportunities for the development of E-banking services, let's first identify what the banks are doing. According to Jordan (1997), these fulfill six main functions: Conducting exchanges; Finance; Transfer purchasing power across time and distance (savings, etc.); Provide risk management (hedge funds, diversification, etc.); Monitor the performance of borrowers (mitigate risks by taking guarantees, etc.); Provide information. If we take these six main functions, we see that E-banking already occupies a prominent place among them. First of all, the "exchange" function is a basic function of these systems (transfers, etc.).
Taking into consideration the case of the Keytrade bank, for its part, it attempted a completely different experiment with “Second Life”. It has thus become the first Belgian bank active in this virtual world. Second Life is a 3D virtual world created by its “Residents” (the users of the software). Since opening to the public in 2003, the community has grown and is now home to millions of "Residents" around the world. The main interest for virtual visitors to visit Keytrade's equally virtual installations is that it makes a tool available free of charge to convert various currencies into "Linden Dollar" (the currency used in this world).) and vice versa. The advantage is that the conversion rate used is automatically updated. This "HUD" (Head Up Display) therefore allows avatars (characters representing the user), when making a purchase in Linden dollars, to immediately know the amount paid in their very real currency, without

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leaving Second Life. That aside, this utility provides instant access to the flow of information provided by Dow Jones45 (real-time economic and financial information). More anecdotal, passers-by can come and pick up Keytrade's t-shirts free of charge to enhance their avatar's "wardrobe". What is interesting about this concept is the clear presence of "Keytrade" on the utility.

2.4.The contribution of digitization to the banking sector

Loyalty should allow better control of the activity. It is the goal of any company wishing to retain its customers. The latter can be loyal to products, services but also and especially in the banking sector at the sign and at the point of sale, the goal of loyalty being a reduction in the costs generated for each customer.
Indeed, all banks but also all other companies are seeing an increase in the costs of acquiring a new customer. A loyal customer will require less financial effort because of his attachment to the brand, the product and / or the point of sale. A study conducted by the community of communes of the Val d´Essonne quantified the impact of customer loyalty. The results obtained confirm the importance of building loyalty after a prospecting campaign but also throughout the life of the company:

- 20% of customers represent 80% of turnover.
- 10% of customers represent 90% of your profits.
- A very satisfied customer tells 3 people about it.
- An unhappy customer tells 12 people about it.
- A very unhappy customer tells 20 people about it.
- 98% of unhappy customers never complain, they just leave you.
- Negative experiences weigh for 65% of lost customers.
- 75% of negative experiences are unrelated to the product.
- The main reason customers leave you is because they are not considered.
- It costs three times more to recruit a customer than to retain them.
- Winning back an unhappy customer costs 12 times more.
- Over a period of 5 years, a company manages to retain an average of 20% of its customers.
- 5% increase in loyalty increases profits by 25-55%.

In view of the figures presented above, we see that loyalty is essential for the proper development of a company and therefore of a bank. In addition, this loyalty is also a vector of prospecting in the sense that a satisfied customer will communicate about his experience to those around him. This communication can be done for the benefit of the bank but also to the detriment of the latter (a dissatisfied customer speaking four times more than a satisfied customer). As seen above, a satisfied customer is a confident customer. The bank needs to address customer expectations in order to increase referral rate as well as consumption since trust level is strongly correlated with purchase intention. At this level Prospecting and the resulting loyalty must also make it possible to respond to a regulatory impact by 2019. Thus all banks must have a capital ratio greater than or equal to 4.5% and a safety cushion of 2.5%, or a total of 7% of equity. Improving customer satisfaction through their loyalty as well as the prospecting process must therefore be done by constantly measuring the resulting risk (s). On the other hand, Acquisition and loyalty are of paramount importance with regard to retail banking in France due to the intensification of competition with the arrival of new entrants such as web giants (Google, Apple, etc.) and specialized Fintechs22 which are totally disrupting the market with their innovations (example: Leetchi, Paypal, etc.).
In addition to this type of competition, changes in consumer behavior, in particular the increased desire for transparency, are also at the origin of a new type of competition brought about by the birth of comparison sites, which allow customers to dissect n any standard banking offer and

therefore to compare easily. The democratization of the use of mobile channels presents a major opportunity for retail banks. Customers tend to take their smartphones with them wherever they go to access online content and shop online. Banks are well aware of these new consumption patterns and 76% 23 of them recognize the effectiveness of digital channels for selling "simple" banking products.

With regard to profitability, this term "represents the ratio between the income of a company and the sums it has mobilized to obtain them. It constitutes a privileged element for evaluating the performance of companies. Economic analysts distinguish two types of profitability: economic and financial. The calculation of financial profitability only takes into account shareholders' equity. It thus makes it possible to understand the capacity to generate profits solely from the capital contributed by the shareholders. Conversely, the calculation of economic profitability is primarily intended for financial investors since it includes all of the company's financial debt.

- *Economic profitability = (operating result - income taxes) / (equity + financial debt)*
- *Financial profitability = (operating result - income taxes - interest paid on financial debts) / equity*

Profitability is therefore an economic-financial, quantitative and qualitative indicator, the objectives of which can be multiple and varied. In recent years, the banking sector has embarked on a vast transformation of its economic model. This transformation is likely to take a few years given the scale of the challenge. Banks that manage to manage this crucial shift well will benefit from many sustainable competitive advantages since they will win the battle for proximity and relevance in the management of their customers. On the other hand, they will be able to benefit from internal improvements provided by the use of new technologies.

2.5.Resistance to new entrants : FinTechs

The democratization of digital in the banking ecosystem is forcing them to adopt a new paradigm and yet jeopardizes the banking system that is resistant to the adoption of new technologies. This hypothesis is verified in many areas such as the media and currently banking, a highly regulated sector which will not escape this wave of changes. According to the estimate of some experts like Francisco Gonzales, only a hundred banks on a global scale will be able to withstand the competition brought by fintechs. The pressure that digitization exerts on the banking sector is mainly a reflection of changes in the mentality of bank users. The new players in this sector, well encouraged by the government, have become aware of these new issues and have started to prove themselves. The latter have positioned themselves in the most profitable segments of the banking market. This positioning is not due to chance, they are mainly positioned in front office activities of the bank known to be less under regulatory pressure.

In addition to their positioning, fintechs have adopted a different angle of attack than banks. They advocate a "costumer-centric" strategy while traditional banks have chosen to center their strategy around their products. As a result, banks are seeing their market share eaten away by this new competition. Cannibalization is attacking retail banking from all sides, from the back office to the front office. The bank has a long way to go yet. It has many opportunities at its disposal to exploit, especially with Big Data, which offers it all possible fields. On the other hand, some industry experts see these Fin Tech as partners who are completely complementary with traditional players. Indeed, Chris Skinner, one of the main influencers on the financial markets, makes predictions in this direction, since he is convinced that Fintechs do not necessarily want the end of traditional banking but rather unify their forces through partnerships in the goal of creating value in this market.

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3. Conclusion

The rapid development of Mobile Money in Africa has profoundly reshaped the banking and financial landscape of the continent. Initially perceived as a threat to traditional institutions, it now appears more as an indispensable partner. Banks, backed by their expertise in compliance, risk management, and brand credibility, quickly realized that integrating digital logic was more strategic than resisting it. The deployment of Mobile Banking solutions has thus become a deliberate response to the relentless incursions of technology into the economic and social lives of Africans.
Mobile phones, as universally accessible tools, have enabled a large segment of the population—including the unbanked—to conduct fast and simple financial operations. Today, any subscriber to a mobile network can hold an electronic account linked to their SIM card, funded either through cash deposits at authorized points of sale or even through direct salary transfers. Such innovations have strongly contributed to enhancing financial inclusion, especially in contexts where physical access to bank branches remains limited, notably in rural areas.
Nevertheless, despite this growing awareness and notable progress, digital transformation remains slow across many African banking institutions. A significant number still require customers to complete paper-based forms for most services. This inertia reflects not only cultural and organizational resistance to change but also the structural gaps in digital infrastructure and staff training.
The COVID-19 pandemic acted as a major accelerator. With increased internet penetration and the pressing need to minimize physical contact, exceptional conditions emerged, compelling banks to reconsider their business models. As with every great historical upheaval, the existing institutions are faced with a decisive challenge: adapt or disappear. Neo-banks and fintechs—agile, innovative, and mobile-centric—are increasingly attracting a clientele eager for speed, simplicity, and seamless mobile solutions.
It is therefore reasonable to foresee that the future of African finance will be shaped around a hybrid ecosystem where traditional banks, telecom operators, and fintechs will coexist. For banks, survival will depend on strengthening partnerships with these actors, investing in cybersecurity, interoperability, and the simplification of customer procedures. Their role will no longer be limited to guaranteeing security and institutional legitimacy; they must also provide the digital fluidity and convenience that new generations of users demand.
Ultimately, Africa finds itself at a historic crossroads. If traditional banks successfully manage their digital transformation, they will consolidate their central role in financing development and economic growth. If not, they risk losing ground to more dynamic and technologically savvy platforms. The question is no longer whether digitalization is necessary, but rather how and how quickly financial institutions can embrace it to meet the expectations of an increasingly connected society.

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