

# Mobile Money Security: A Comparative Study Between Nigeria and Kenya's Approaches

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## ABSTRACT

This review explores mobile money security in Nigeria and Kenya, examining the differing approaches each country has adopted to address security challenges in the rapidly growing mobile money sector. Mobile money has become a key driver of financial inclusion in sub-Saharan Africa, offering millions of previously unbanked individuals access to financial services. However, the rise in mobile money usage has introduced significant security concerns, including fraud, data breaches, and cyberattacks. Kenya, with its mature regulatory environment and comprehensive security measures, serves as a global leader in mobile money security. In contrast, Nigeria's mobile money market is expanding rapidly but faces challenges in regulatory oversight and infrastructure, leading to more pronounced security vulnerabilities. This study compares the security strategies of both countries, analyzing the effectiveness of technologies, regulatory frameworks, and consumer education. It also identifies the security challenges faced by users and provides recommendations for improving mobile money security across the region.

**Keywords:** Mobile Money, Security, Financial Inclusion, Kenya, Nigeria, Cybersecurity, Fraud Prevention.

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## INTRODUCTION

The rapid growth of mobile money services in sub-Saharan Africa has marked a significant milestone in the pursuit of financial inclusion. These services have allowed millions of previously unbanked individuals access to financial tools that were once reserved for those with formal banking relationships. Mobile money platforms such as Kenya's M-Pesa and various providers in Nigeria have transformed the financial landscape of these countries, making financial transactions more accessible, faster, and often cheaper [1]. However, as mobile money becomes integral to everyday financial activities, security concerns have emerged as a pressing issue. While mobile money has created substantial opportunities for financial inclusion, it has also introduced new risks related to fraud, cyber-attacks, and data breaches. This comparative study aims to explore the differing approaches to mobile money security in Nigeria and Kenya, examining how each country has addressed these challenges and what lessons can be drawn from their experiences [2].

Mobile money services have played a pivotal role in reshaping the financial ecosystem in sub-Saharan Africa, a region traditionally characterized by low levels of formal banking penetration. In Kenya, M-Pesa, launched by Safaricom in 2007, set the stage for mobile money's success in the region. As of 2021, M-Pesa had over 28 million subscribers and had revolutionized how Kenyans send money, pay bills, and even access loans. M-Pesa's success is often attributed to several key factors: a favorable regulatory environment, a partnership between telecommunications companies and financial institutions, and a strong network of agents across the country [3]. Kenya's approach to mobile money security, grounded in both regulatory oversight and strategic partnerships, has made it a global leader in mobile financial services.

In contrast, Nigeria, the most populous country in Africa with over 200 million people, has witnessed significant growth in mobile money services in recent years. While mobile money services such as Paga, OPay, and MTN's MoMo are relatively new compared to M-Pesa, they have rapidly gained popularity. Nigeria's urban areas, in particular, have experienced rapid adoption due to high smartphone penetration and the large proportion of

unbanked individuals. However, unlike Kenya, Nigeria's mobile money ecosystem faces more fragmented regulatory oversight, challenges in infrastructure, and varying levels of public trust [4]. While Nigeria is catching up with Kenya in terms of mobile money adoption, security concerns have been more pronounced, with numerous reports of fraud and security breaches. This has placed mobile money security at the forefront of discussions regarding the sustainable development of the sector in Nigeria [5].

Despite the challenges, both Kenya and Nigeria have made substantial strides in ensuring the security of mobile money transactions, albeit through different approaches. Kenya's emphasis on regulation and partnerships with financial institutions has served as a model for several countries. In contrast, Nigeria's rapid adoption of mobile money has been hindered by fragmented security frameworks, which makes a comprehensive security strategy crucial for the country's long-term success in mobile financial services [5]. This study, therefore, delves into these two countries' approaches to mobile money security, offering a comparative analysis that highlights the successes and shortcomings of each country's strategy.

The increasing reliance on mobile money services in sub-Saharan Africa presents a double-edged sword. On one hand, it offers unprecedented access to financial services for millions of unbanked individuals. On the other hand, the digital nature of mobile money services introduces significant security vulnerabilities, such as fraud, hacking, identity theft, and data breaches. While Kenya has been a pioneer in mobile money adoption and security measures, its systems are not immune to security risks, with reports of fraud and user data theft periodically emerging [6]. Similarly, in Nigeria, the rapid growth of mobile money platforms has outpaced the development of robust security frameworks, leaving users vulnerable to various forms of fraud and exploitation. This comparative study seeks to understand the specific security challenges faced by mobile money platforms in these two countries. It will analyze the effectiveness of the security measures in place, as well as the regulatory frameworks designed to protect users [7]. By focusing on Nigeria and Kenya, the study aims to identify the strengths and weaknesses of each country's approach to mobile money security and offer recommendations for improving the security and trustworthiness of mobile money systems across the region [8]. This study aims to address the critical issue of mobile money security in Nigeria and Kenya by comparing the security frameworks and measures adopted by mobile money providers in both countries. The first objective focuses on analyzing the security protocols, technologies, and policies that are in place, providing a detailed comparison of the different approaches used in each country. Secondly, the study will examine the regulatory landscape, assessing how government agencies and financial institutions in both nations oversee mobile money services and ensure security. The third objective is to identify the common security challenges mobile money users face, such as fraud, cyber-attacks, and phishing scams, and how these threats are mitigated. Additionally, the study will explore the relationship between mobile money security measures and user trust, seeking to understand how these security practices influence user adoption and confidence. Finally, the study will propose actionable recommendations for enhancing mobile money security in both countries, drawing lessons from Kenya's successes and Nigeria's challenges. This research will contribute to the academic literature on mobile money security, inform policymakers and regulatory bodies, assist mobile money providers in strengthening security protocols, and offer valuable lessons for the broader sub-Saharan African region. By ensuring mobile money remains secure, the study supports the continued growth of financial inclusion across the continent.

### **Security Concerns in Mobile Money**

As mobile money services continue to grow across Africa, so too do the security concerns that accompany this expansion. Mobile money platforms, while providing convenient financial solutions, are increasingly targeted by fraudsters seeking unauthorized access to user accounts, intercepting transactions, or engaging in various forms of criminal activities. One of the primary concerns is account takeover, where fraudsters use tactics like SIM card swapping or phishing to gain access to users' accounts [9]. Transaction security is another significant issue, as mobile money transactions can be intercepted if the platforms lack robust encryption protocols or multi-factor authentication measures. Additionally, the rise in mobile money adoption has led to an uptick in fraudulent activities such as money laundering, phishing scams, and unauthorized fund transfers, making it essential to strengthen security frameworks [10].

In response to these security threats, Kenya has implemented a comprehensive approach to safeguard its mobile money ecosystem, particularly through regulatory and technological measures. The Central Bank of Kenya (CBK) plays a pivotal role in regulating mobile money platforms, ensuring compliance with stringent security guidelines, including data protection laws aligned with the Data Protection Act. One of the key strategies in Kenya's mobile money security model is encryption, with platforms like M-Pesa investing heavily in safeguarding customer data from cyberattacks [11]. The country has also placed a strong emphasis on customer education, with Safaricom, the operator of M-Pesa, regularly running campaigns to inform users about common fraud tactics and the importance of securing their accounts. Moreover, the introduction of two-factor authentication (2FA), including PINs and biometric verification, has significantly enhanced security by preventing unauthorized access to mobile wallets. Additionally, Kenya's collaboration with law enforcement agencies, including specialized cybercrime units, ensures a swift response to fraud incidents [12].

Meanwhile, Nigeria, which is relatively new to mobile money services, has also taken several measures to bolster the security of its mobile money platforms. The Central Bank of Nigeria (CBN) has established regulatory guidelines that require mobile money providers to implement strict Know-Your-Customer (KYC) processes and secure technologies. Nigerian platforms like Paga and OPay have adopted end-to-end encryption and secure payment gateways to protect financial transactions and customer data [13]. Additionally, biometric verification, such as fingerprint or facial recognition, is now used by platforms like MTN's MoMo to prevent unauthorized account access. Furthermore, Nigeria's mobile money services have integrated advanced fraud detection systems powered by artificial intelligence (AI), which monitor transaction patterns for suspicious activity. Like Kenya, user education in Nigeria plays a vital role in securing mobile money services, with providers actively promoting awareness on how to create secure PINs, safeguard mobile phones, and report fraudulent activities [14].

#### **Comparative Analysis of Security Approaches**

In comparing the mobile money security approaches in Kenya and Nigeria, both nations have made significant progress, though some differences remain. Kenya's regulatory environment is often regarded as more mature, having developed alongside the rapid growth of mobile money services. The Central Bank of Kenya (CBK) places a strong emphasis on data protection and consumer rights, providing a solid foundation for mobile money security [15]. In contrast, Nigeria's regulatory framework is still evolving. Although the Central Bank of Nigeria (CBN) has introduced important security guidelines, challenges persist in their implementation, particularly with enforcing strict adherence across various platforms. Both countries have adopted advanced technologies to secure mobile money transactions, yet Kenya has historically been a pioneer in implementing encryption and multi-factor authentication systems. Nigeria, while initially lagging, is now adopting cutting-edge technologies such as artificial intelligence-driven fraud detection and biometric verification to bolster security. Furthermore, Kenya benefits from a well-established collaboration with law enforcement agencies, which has facilitated quicker responses to fraud and cybercrime. In Nigeria, however, collaboration with law enforcement is still in development, with ongoing efforts aimed at improving the country's capacity to address mobile money fraud at the national level. Regarding consumer education, Kenya has an established framework of educational campaigns integrated into the daily use of mobile money platforms like M-Pesa. This widespread awareness has contributed to a more informed user base [16]. While Nigeria also promotes user education, the level of public awareness surrounding mobile money security risks is less widespread, indicating a gap in comprehensive consumer outreach.

#### **Challenges and Opportunities**

Despite notable advancements in mobile money systems in both Kenya and Nigeria, significant challenges persist in maintaining robust security. In Kenya, M-Pesa has established itself as a global leader in mobile money, yet the rapid proliferation of mobile money services has made it a prime target for fraudsters. The increasing number of fraud attempts, including SIM card swapping and phishing scams, poses a serious threat to the safety of users' funds. On the other hand, Nigeria's mobile money market is expanding rapidly, but the absence of standardized regulations and the limited collaboration between mobile money operators create a fragmented and less secure environment [17]. The lack of a unified approach to security protocols has made the sector vulnerable to cybercrime, with users at constant risk of financial losses.

However, both countries also face unique opportunities for collaboration and mutual learning. Kenya, with its advanced regulatory framework and experience in mobile money security, could benefit from Nigeria's innovative use of artificial intelligence (AI) and biometrics for enhanced fraud detection. These technologies have the potential to significantly improve security by identifying fraudulent activities in real-time. Meanwhile, Nigeria could draw valuable insights from Kenya's regulatory maturity, incorporating best practices to develop a more cohesive and comprehensive security framework for its mobile money ecosystem, ultimately benefiting both consumers and service providers [18].

#### **CONCLUSION**

In conclusion, mobile money security is an increasingly vital concern as the adoption of mobile money services continues to grow in both Nigeria and Kenya. With more users depending on these services for daily transactions, the protection of financial data and transactions has become a priority. Kenya, with its mature regulatory environment and extensive experience in mobile money, offers valuable lessons in establishing robust security protocols. The country's framework includes well-developed systems for fraud prevention and user protection. On the other hand, Nigeria's rapid technological advancements, including the integration of AI-driven fraud detection and biometric verification, demonstrate innovative approaches to strengthening security. These measures play a crucial role in minimizing vulnerabilities and enhancing the overall trust in mobile money services. However, for both countries to sustain the growth of mobile money, continued investment in security infrastructure, the development of comprehensive regulatory frameworks, and robust consumer education are essential to build a secure and resilient financial ecosystem.

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**CITE AS: Amina Nalongo J. (2026). Mobile Money Security: A Comparative Study Between Nigeria and Kenya's Approaches. IDOSR JOURNAL OF COMPUTER AND APPLIED SCIENCES 11(1):30-33. <https://doi.org/10.59298/JCAS/2026/1113033>**