

DIGITAL MOBILE PAYMENT AND ECONOMIC GROWTH IN KENYA AND NIGERIA: A COMPARATIVE ANALYSIS¹

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ARTICLE INFO

Review Scientific Paper

Received: 11.12.2025

Revised: 01.05.2026

Accepted: 28.05.2026

doi:10.63356/ace.2026.008

UDK

336.71:004.738.5(669)(676.2)

COBISS.RS-ID 144553217

Keywords: *digital mobile payment, economic growth, Kenya, Nigeria, ARDL.*

JEL Classification: E50,
G20, L86, O23, O33, O42,
P50

ABSTRACT

Mobile payment technology allows digital transactions via smartphones and tablets using methods like NFC, QR codes, and payment apps. This innovation enables consumers to purchase goods and services without physical cards or cash. The global mobile payment market, valued at \$2.98 trillion in 2023, is expected to grow to \$27.81 trillion by 2032, changing how customers engage with businesses and manage finances. In Nigeria and Kenya, mobile phones serve as vital tools for financial services, e-commerce, and entertainment. This study aims to compare the adoption of digital mobile payments and their impact on economic growth in these countries. It uses quarterly data from Q1 2010 to Q4 2024 from the Central Banks of Kenya and Nigeria, employing the Auto-Regressive Distributed Lag (ARDL) model for analysis. Unit root tests showed variables were integrated of I(0) and I(1), and co-integration tests confirmed long-term relationships. Findings reveal that mobile money payments significantly influence economic growth in both nations, with mixed short-term effects and a positive long-term correlation. The study recommends collaboration among regulators, mobile network operators, fintech firms, and banks to enhance mobile financial services in both countries.

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1. INTRODUCTION

Digital and mobile banking have transformed Kenya and Nigeria's financial sectors by increasing financial inclusion, reducing transaction costs, and improving access to services. The rapid adoption of mobile phones, fintech advancements, and better internet connectivity have accelerated the transition from traditional banking to digital financial systems, allowing people to conduct transactions in new ways ([Windasari et al., 2022](#)). These services, which mainly require a mobile phone and a bank account have revolutionised the payment system and made financial accessibility easier for many people. Mobile payment, also known as mobile money, mobile money transfer, and mobile wallet, includes various payment processing services that follow financial regulations and are done through a mobile device. Instead of using cash, checks, or credit cards, consumers can use a payment app on their mobile devices to pay for a wide range of services and digital or physical goods. The mobile phone acts as the initiator, authoriser, or confirmer of the transaction, while cellular providers provide a platform that connects to an individual's bank or mobile wallet ([Hughes & Lonie, 2007](#)). Although the concept of non-coin-based currency systems has a long history, it is only in the 21st century that the technology supporting such systems has become widely accessible. Mobile payments gained popularity in Japan during the 2000s and then spread globally through various means. The first patent specifically defining a "Mobile Payment System" was filed in 2000 ([Japanese Drive Mobile Payment Market, 2011](#)).

Prior to mobile and digital banking, Kenya and Nigeria faced major financial system weaknesses. In Kenya, before M-Pesa was launched in 2007, commercial banks and microfinance institutions mainly served urban areas like Nairobi, Mombasa, and Kisumu. Similarly, Nigeria's banking sector was dominated by traditional banks like First Bank and Guaranty Trust Bank, which catered primarily to urban elites and large corporations, leaving many without access to financial services. Geographic branch concentration, high transaction costs, and bureaucratic hurdles further limited access. The rise of mobile money and digital banking transformed these systems by decentralising services and reducing reliance on physical banks. M-Pesa in Kenya turned mobile phones into financial access tools, while Nigeria's fintech innovations enhanced electronic transfers and mobile banking, greatly improving transaction efficiency and financial inclusion in both countries ([Aron, 2018](#)). Kenya is a leader in mobile banking, primarily due to M-Pesa, which has integrated mobile financial services into daily life since its launch by Safaricom in 2007. By 2025, mobile money usage in Kenya was projected to surpass 90%, with around 45-51 million active users and over 400,000 agent outlets ([Communications Authority of Kenya, 2025](#)).

M-Pesa has notably reduced poverty and enhanced financial access (Suri & Jack, 2016). In contrast, Nigeria has experienced rapid digital banking growth driven by fintech innovations, increased smartphone adoption, and a cashless policy from the Central Bank. The 2023 cash scarcity crisis further accelerated the move to electronic transactions, with Nigeria reaching about 150 million mobile connections and 107 million internet users by early 2025 (DataReportal, 2025).

In developing nations, digital mobile payment solutions are utilised to offer financial services to the unbanked or underbanked population. This group accounts for approximately 50% of the global adult population, as stated in the Financial Access 2009 Report. According to the Financial Access 2025 Report, 79% of adults globally have a financial account, with 2.3 billion mobile money accounts and mobile transactions totaling 593 million. Additionally, 42% of adults in developing economies use digital merchant payments, highlighting mobile money's rapid growth in financial inclusion worldwide. Mobile payments are now crucial for payment service providers and other market participants to seek out new growth opportunities, according to the European Payments Council. These innovative technology solutions improve operational efficiency, resulting in cost savings and increased business volume. Merchants have also created their own payment platforms like Google Pay, Paypal, and Apple Pay, reducing dependence on traditional payment methods such as cash, bank transfers, cheques, and card payments. The exchange of funds for goods or services has become more convenient in today's world (Harb, Farahat, & Ezz, 2008).

Kenya has experienced a significant shift in its payment landscape in recent times. Businesses and individuals in Kenya have access to a range of payment options, from conventional methods like cards and bank transfers to alternative payment methods (APMs). Mobile payments, especially M-Pesa, have played a vital role in this shift. In Kenya, M-Pesa is the most popular payment method, followed by Paypal, Airtel, and other APMs. The growth of mobile money has been particularly impressive in Africa, making it the top mobile money market globally. The adoption of mobile money in Africa is on the rise, with East Africa, particularly Kenya, at the forefront, while West Africa, led by Nigeria, is making significant progress. Kenya holds the highest position on the continent for cashless transactions, achieving a rate of 75.8%. Meanwhile, Nigeria boasts the highest mobile phone penetration rate in Africa at 85%, with 92% of adult males possessing a mobile device (Diallo, 2024; Micheal, 2024). The extensive utilisation of mobile money services such as M-Pesa has revolutionised transaction methods for both individuals and businesses. In Kenya mobile money has 48% share of payments, which is the highest share of mobile payment, followed by cash on delivery 30%, cards 15%, bank transfer 5% and others 2%

Central Bank of Kenya (CBK, 2023). In 2025, mobile money wallets in Kenya (M-Pesa, Airtel Money) accounted for 50-55% of payments, the highest share among all payment methods, followed by mobile banking apps/bank transfer (35-42%), cash payment (20-30%), debit and credit cards (8-13%) and other digital payment methods (Paypal, fintech wallet, QR, etc) with 3-7%.

M-Pesa, a digital mobile payment service, is widely used in Kenya. It was introduced in 2007 and changed the financial industry. Users can store money, transfer funds, pay bills, and access microloans easily with their smartphones. Safaricom, the operator, claims it has more than 30 million users in Kenya, making it one of the largest mobile payment ecosystems globally. Recent reports indicate that M-Pesa had approximately 35-38 million active users between 2025 and 2026, reflecting the continued expansion of digital financial services in Kenya (Safaricom, 2025; TechCabal, 2025). Following M-Pesa, Paypal is another digital mobile wallet that allows fund transfers between accounts, promoting financial inclusivity. Airtel Money in Kenya also offers mobile payment services, making financial transactions convenient. By the end of 2022, Airtel Money had over 17 million subscribers, establishing itself as a major player in the country and demonstrating the increasing adoption of alternative mobile payment platforms within the country's digital financial ecosystem (Communications Authority of Kenya, 2023). Skrill and Pesapal are other popular digital payment platforms in Kenya, providing users with various payment options. Skrill enables users to receive money in any currency and transfer it to their M-PESA account quickly, while Pesapal allows payments through mobile devices using services like M-PESA and Airtel Money. Pesapal acts as an intermediary between customers and merchants. (CBK, 2022). Oluwole (2022) reported that in Africa, Kenyan businesses have a higher preference for mobile wallets (56%) compared to Nigeria (14%) and South Africa (7%). The survey also revealed that 71% of businesses in Kenya use cash for payments, while businesses in Nigeria (94%) and South Africa (91%) rely more on cash. This indicates that the lower use of cash among Kenyan businesses is reflected in their strong preference for mobile wallets. The study also found that digital payments are widely used in sectors such as food, entertainment, tours and accommodation, agriculture, transport and delivery, and professional services in Kenya.

From 2007 to the present, there have been over 32.5 million active mobile money subscriptions, 5.2 billion transfers, and 264,390 active mobile money agents in Kenya. In 2018, there were 47.7 million mobile accounts compared to 37.39 million in 2017 (CBK, 2019). The use of mobile money services has greatly contributed to financial inclusion and has facilitated cash transfers and investments in various sectors of the economy (Ozili, 2018). In 2018, mobile

money transactions in Kenya amounted to Sh3.98 trillion (\$38.5 billion), with an average daily value of Sh10.92 billion (\$108 million). This represents almost half of the country's GDP and highlights the increasing importance of digital wallets to the economy. The growth of mobile payments has made it possible to pay for both public and private services using a basic mobile phone. In July 2022 alone, there were over 1.2 billion mobile money transactions, totaling over \$23 billion. On a daily basis, this translates to approximately 42 million transactions valued at about \$730 million (CBK, 2023). In 2007, there were only about one million active mobile money customers in Kenya. By 2022, this number has increased to over half of the country's population of 48 million people. There are approximately 310,000 mobile money agents in 2022, offering services like cash deposits and withdrawals valued at over \$6 billion (CBK, 2023). Mobile money is a key player in Kenya's economy, contributing to nearly 70 percent of the GDP (Global Voice Group, 2023).

Nigeria, the largest economy in Africa and the 24th largest in the world, presents great opportunities for businesses looking to expand. With a population of 200 million, 60 percent of whom have access to financial services, Nigeria's digital market is thriving. Mobile money has played a crucial role in this growth, as the country has low bank penetration rates and high mobile acceptance. Through their mobile phones, customers can access a digital account provided by their mobile network operator, with all transactions authorised and recorded in real time using SMS (Paymentwall, 2024). The adoption of digital payments has been remarkable, with penetration rates increasing from 23 percent to 46 percent in less than eight years across Nigeria and other African countries (Okeowo, 2024). In fact, Nigeria alone witnessed a significant surge in digital mobile payments, as evidenced by the 1.35 billion electronic gateway transactions recorded in March 2023, a staggering increase of 448.54 million compared to February 2023. Additionally, cashless transactions grew by 44.84 percent to N126.73 trillion in the first quarter of 2023, up from N87.49 trillion in the same period of 2022 (Okeowo, 2024).

The value of digital mobile payment transactions in Nigeria reached \$54.4 billion in 2022. Projections indicate that this value will soar to \$150 billion by 2025, highlighting the increasing reliance on digital financial solutions (Global Legal Insights, 2023). From 2025 to 2026, Nigeria's digital mobile payment was valued at roughly \$750-\$850 billion USD annually based on Fintech (2026) and Nigeria Inter-Bank Settlement System (NIBSS, 2026). Statista (2023) reports that 84.7% of Nigerians own a mobile phone, providing a strong foundation for the widespread adoption of mobile payment apps. During the COVID-19 pandemic, the percentage of active users of mobile payment apps in Nigeria increased

significantly, showcasing the crucial role these apps played during challenging times (World Bank, 2023). The growth of mobile payment apps in Nigeria is driven by factors such as the availability of affordable Smartphone’s from various brands and the provision of financial services to previously unbanked populations, thus expanding financial inclusion. The highly competitive fintech sector in Nigeria fosters continuous innovation, resulting in the development of new features and services. Additionally, the value of digital mobile payments in Nigeria saw remarkable growth, reaching 387.1 trillion naira by 2022. In the first five months of 2023 alone, the total transactions amounted to 211.1 trillion naira, indicating further acceleration. Mobile payments surged in Nigeria after the 2023 cash shortage, with fintechs like Opay, Palmpay, Moniepoint, and Kuda Bank seeing increased user adoption. By 2024, Nigeria’s electronic payment ecosystem exceeded ₦1 quadrillion in instant payment value. This growth in digital mobile money payments has led to increased efficiency in financial transactions, easier access to financial services for a larger population, reduced business transaction costs, and increased profitability and reinvestment (Abimbola, 2024). The value of mobile money transactions as a percentage of GDP has also grown significantly, reaching 16.11 percent from 8.74 percent. CBN (2025) reported mobile payment value of ₦1549.4 trillion or \$1.06 million USD for first half of 2024 across broader mobile payment channels. Figure 2 below shows a stable increase of mobile payment from 1.27 billion naira/\$8.44 million USD in 2009 to ₦125 trillion/\$82.2 billion USD in 2025 (CBN, 2025).

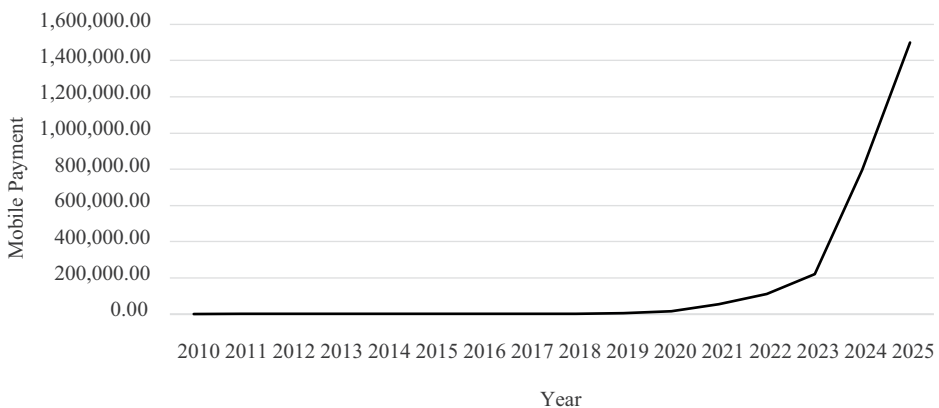


Figure 1: Values of Mobile Payment (₦ billions) in Nigeria
 Source: Authors’ compilation from CBN (2025)

Mobile money banking in Kenya faces several strategic challenges, including the need for restructuring, customer reluctance, high costs, system failures,

network vulnerabilities, software defects, operating mistakes, processing errors, and data loss due to viruses. Additionally, M-Pesa has its own shortcomings, such as fees that prevent small transactions (Comminos, Esselaar, Ndiwalana & Stork, 2008), limited mobile phone access (Jack & Suri, 2011), difficulties for agents managing liquidity and raising capital (Eijkman, Kendall, & Mas, 2010), and complications for integrating with third-party organisations (Sadana et al., 2011). Another challenge is the risk of cash loss through theft from employees or organised individuals targeting M-Pesa shops. In Nigeria, the mobile money payment model requires owning a bank account, which poses a challenge for people in remote areas and villages. Many people in developing countries like Kenya and Nigeria are still unfamiliar with mobile money and have limited knowledge of mobile payments. Furthermore, a significant number of individuals in these countries are financially excluded and lack access to banking services or mobile payments (Mogaji et al, 2021).

Many studies have explored the link between digital payment systems and economic growth. Research indicates that digital payment methods like mobile phones, PoS systems, and web transfers significantly impact Nigeria's economic growth (GDP), while ATMs have an insignificant effect. Some studies suggest PoS and web transactions negatively affect growth, while ATM and mobile payments show a positive but insignificant impact. Other research claims all digital payment methods significantly influence economic growth in Nigeria. Onwere and Oke (2023) compared Kenya and Nigeria, finding mobile banking and PoS systems had an insignificant impact in both countries, with ATMs showing an insignificant effect in Kenya and a negative significant effect in Nigeria. Conversely, Nyaga and Ogollah (2015), Thinguri et al. (2014), and Otieno et al. (2016) focused on the challenges of adopting mobile payment services, highlighting issues such as lack of network coverage in rural areas, few phone money agents, inadequate information on mobile features, and high service charges.

Based on the above empirical findings, this research contributes to knowledge by exploring a specific digital payment method and the most popular digital payment in the countries being studied. Since many people own phones and are familiar with using mobile apps, the study examined the impact of digital mobile phone payments on economic growth in Kenya and Nigeria through a comparative analysis. The research utilised the auto-regressive distributed lag (ARDL) model to understand the relationship between mobile payment and economic growth in both countries using quarterly data from 2010Q1 to 2024Q4. These two countries are chosen because they are regarded as the world's leading mobile banking and mobile money economies due to the success of M-Pesa and

fintech. The upcoming sections will include a literature review, methodology, data analysis, and discussion, as well as conclusions and recommendations.

1.1 Research Hypotheses

Ho₁: Digital mobile payment has no significant effect on economic growth in Kenya

Ho₂: Digital mobile payment has no significant effect on economic growth in Nigeria

2. REVIEW OF LITERATURES

2.1 Theoretical Literatures

Endogenous growth theory: The endogenous growth model focuses on technological innovation, which is developed in the research and development (R&D) areas by incorporating human capital and existing knowledge stock. According to this theory, various factors that create opportunities and incentives for generating technological knowledge are crucial for long-term growth. Additionally, the theory suggests that long-term growth relies on the growth rate of total factor productivity, which is influenced by the rate of technological progress. It argues that enhancing productivity is directly linked to faster innovation and increased investments in human capital by governments and private sector institutions. These efforts aim to foster innovation initiatives and provide incentives for individuals and businesses to be more creative, such as funding for research and development (R&D) and intellectual property.

Diffusion of Innovation Theory: The diffusion of innovation theory, created by E.M. Rogers in 1962, examines how new ideas or products spread through a population over time. The adoption of these innovations occurs when individuals perceive them as new and beneficial. Adoption does not happen all at once, with some people being more likely to adopt early on. Understanding the characteristics of a target population is important when promoting a new innovation. DOI theory elucidates the diffusion of mobile payment innovations, such as mobile wallets and fintech applications, driven by perceived advantages over cash transactions. Key factors influencing adoption include relative advantage, compatibility, complexity, trialability, and observability. The rapid uptake of mobile payments in Nigeria post-2023 cash scarcity exemplifies how environmental pressures enhance innovation diffusion. Thus, DOI theory is vital for analysing mobile payment adoption across socioeconomic groups.

Technology Acceptance Model: Davis' (1985) Technology Acceptance Model (TAM) states that a potential adopter's attitude and expectations towards an innovation determine its likelihood of adoption. TAM focuses on two key concepts: perceived ease of use (how easy the innovation is to learn and implement) and perceived usefulness (how much the innovation improves personal or job-related performance). Davis believed that ease of use directly influences perceived usefulness, as technology that is perceived as easy to use is more likely to be adopted and increase productivity. Ultimately, Davis found that an innovation's perceived usefulness is more important than its ease of use in determining adoption. TAM is widely used in mobile payment studies, as it effectively captures consumer perceptions and intentions. Empirical evidence shows that perceived usefulness and ease of use significantly impact adoption, particularly in rapidly growing fintech markets, making TAM a strong framework for evaluating mobile banking acceptance.

Financial Intermediate Theory: The theory of financial intermediation explains how financial institutions facilitate the efficient distribution of resources, reduce transaction costs, and boost economic activities. It highlights the role of intermediaries like banks and fintech in enhancing market efficiency by linking savers with financial service users. Mobile payment innovations significantly contribute to financial intermediation by increasing access to services for unbanked and underbanked communities. With mobile technology, individuals can conduct transactions, save, transfer money, and access financial products without relying solely on traditional banks. Thus, this theory is crucial for research on the macroeconomic effects of mobile payment innovations, including their influence on financial inclusion, economic growth, and monetary policy effectiveness.

2.2 Empirical Literatures

Gitonga (2025) found that M-Pesa adoption significantly boosted sales, expanded customer bases, improved efficiency, and enhanced sustainability for SMEs in Nakuru Town, Kenya. Batista and Vicente (2025) conducted a randomised field experiment in rural Mozambique, revealing that mobile money reduces remittance costs, improves household welfare, and strengthens resilience to economic shocks like floods and income instability. Anazia & Nwachukwu (2025) argued that M-Pesa transformed Kenya's financial landscape by increasing SME productivity, facilitating cashless transactions, and promoting economic growth, with mobile money improving efficiency and reducing costs. Lambon and Oceansay (2025) analysed panel data from 38 sub-Saharan African countries, including Ghana, and found that mobile money positively influences economic

growth, especially when supported by financial stability and job creation, using the Generalized Method of Moments (GMM) to address endogeneity issues.

[Okafor and Ibrahim \(2024\)](#) used the ARDL model on Nigerian data from 2012 to 2014, finding that digital payment platforms positively impact real GDP in both the short and long term, with mobile payments having the most significant effect. [Udeh and Chukwu \(2024\)](#) found that mobile transfers, web payments, and electronic fund transfers positively influence Nigeria's GDP, suggesting that fintech innovations improve financial system efficiency and increase money circulation. [Eze and Okoye \(2024\)](#) examined the effects of monetary policy on electronic money adoption in Nigeria, noting that rapid growth in electronic payment systems could impact money demand stability and monetary policy transmission, altering liquidity behavior and financial intermediation dynamics.

[Onwere and Oke \(2023\)](#) conducted a study comparing the impact of digital banking on the economic growth of Nigeria and Kenya using quarterly data from 2011 to 2021. They analysed mobile banking, ATMs, and point-of-sale terminals with the ARDL model. Results indicated that mobile banking and ATMs in Kenya, as well as point-of-sale terminals, did not significantly contribute to long-term economic growth, while Nigeria's ATMs had a negative effect. The study recommends extending the analysis period to the fourth quarter of 2022 and suggests that the central banks of both countries should promote greater awareness and adoption of digital banking services. [Appah, Tebepah, and Newstyle \(2023\)](#) analysed the effect of digital financial services on Nigeria's economic growth from 2006 to 2021, finding that ATMs and mobile banking had a positive but insignificant influence on real GDP, while point-of-sale (PoS) and web banking significantly impacted growth. [Adebisi, Zannu, & Dada \(2023\)](#) examined digital payment methods' effect on sustainable growth using data from 2015 to 2021, concluding that ATMs and mobile payments had a positive but insignificant effect, whereas PoS and web payments had a negative impact. Both studies propose comparative research between Kenya and Nigeria, extending their studies to 2022Q4, with the latter study attributing impacts to financial illiteracy and inadequate internet access.

[Marafa \(2022\)](#) examined the influence of digital payment systems on Nigeria's economic growth using quarterly data from 2010q1 to 2021q2, employing the ARDL bound test and Granger causality test. The results showed a long-run relationship and significant positive impacts of digital payment variables on economic growth, with unidirectional causality from digital payment platforms to growth. Building on this, a comparative study between Kenya and Nigeria will extend the analysis to 2022Q4. [Olofin \(2023\)](#) investigated the digital economy's

effect on growth in Bangladesh, Ethiopia, Kenya, and Nigeria from 1985 to 2017, revealing contributions of the digital economy and institutional quality, while factors like corruption hinder growth. The current study will focus on Kenya and Nigeria, applying the ARDL model and extending the timeline to 2022Q4. [Tiony \(2023\)](#) studied the impact of digital financial services on financial inclusion in Kenya using secondary data from various sources, revealing a notable increase in access to banking services via digital channels, particularly mobile money platforms like M-Pesa. [Zwingina, Onoh, and Chukwu \(2023\)](#) explored the effect of electronic payment systems on Nigeria's economic growth from 2009 to 2018, finding a positive relationship through the use of the ARDL model. Both studies propose comparative analyses between Kenya and Nigeria, with Tiony focusing on digital financial services and Zwingina et al. examining electronic payment systems, extending the research period for Nigeria to 2010Q1-2022Q4.

[Hussein and Ritzen \(2021\)](#) analysed the influence of mobile money payments on economic growth in Sub-Saharan Africa, utilising panel data from 2012 to 2018 across four regions. They identified that total transactions positively impacted economic growth, while active accounts and agents did not significantly affect growth. Building on this, a comparative study focusing on Kenya and Nigeria will extend the research period to 2022Q4. [Nyaga and Ogollah \(2015\)](#) explored barriers to adopting mobile money transfer services in Nairobi, employing descriptive methods and questionnaires. Their findings highlighted considerable challenges facing Mobile Network Operators. The forthcoming study will leverage secondary quarterly data from 2010 to 2022 and apply the ARDL model for a comparative analysis between Kenya and Nigeria. [Otieno et al. \(2016\)](#) explored the challenges of mobile money services in Kenya, using qualitative methods with primary and secondary data. Their findings identified significant obstacles in rural communities, such as lack of information, inadequate cash and e-floats by agents, limited agent availability, and the absence of national ID cards among potential users. The current study aims to conduct a comparative analysis between Kenya and Nigeria from 2010 to 2022, utilising secondary quarterly data and the ARDL model.

3. METHODS

3.1 Theoretical framework

This study focuses on the endogenous growth model, which highlights technology progress as the main driver of long-term economic growth. Unlike the neoclassical growth model, endogenous models consider technological progress as a key

factor that can lead to increasing returns to scale. The AK model, developed by Arrow in 1962, suggests that productivity can improve through experience and practice. Many endogenous growth theories, such as those proposed by Lucas (1988), Romer (1986), and Rebelo (1991), emphasise the importance of factors influencing technology (represented by A) and the accumulation of human and physical capital (represented by K).

3.2 The Model

The ARDL model, also known as the bound testing approach, was introduced by Pesaren et al. in 2001 and is used for single equation modeling. It is a co-integration technique that analyses long-run and short-run relationships between variables, regardless of their order of integration, whether the variables in the study are purely $I(0)$ or $I(1)$. The variables were used in their original form

The error correction form of an ARDL ($p\ q$) (Bound test) regression model is as follows

$$\Delta y_t = \alpha_0 + \sum_{i=1}^p \alpha_i \Delta y_{t-i} + \sum_{i=0}^q \beta_i \Delta x_{1t-i} + \sum_{i=0}^q \gamma_k \Delta x_{2t-k} + \phi_0 y_{t-1} + \phi x_{1t-1} + \phi x_{2t-1} + \varepsilon_t \dots (1)$$

Model Specification

Kenya

$$\begin{aligned} KRGP = & \alpha_0 + \sum_{i=1}^p \alpha_{1i} \Delta KRGP_{t-i} + \sum_{i=0}^p \alpha_{2i} \Delta MPVA_{t-i} + \sum_{i=0}^p \alpha_{3i} \Delta MPVO_{t-i} \\ & + \sum_{i=0}^p \alpha_{4i} \Delta HCAP_{t-i} + \sum_{i=0}^p \alpha_{5i} \Delta K_{t-i} + \beta_1 KRGP_{t-1} + \beta_2 MPVA_{t-1} + \beta_3 MPVO_{t-1} \\ & + \beta_4 HCAP_{t-1} + \beta_5 K_{t-1} + \varepsilon_t \dots (2) \end{aligned}$$

Nigeria

$$\begin{aligned} NRGDP = & \alpha_0 + \sum_{i=1}^p \alpha_{1i} \Delta NRGDP_{t-i} + \sum_{i=0}^p \alpha_{2i} \Delta MPVA_{t-i} + \sum_{i=0}^p \alpha_{3i} \Delta MPVO_{t-i} \\ & + \sum_{i=0}^p \alpha_{4i} \Delta HCAP_{t-i} + \sum_{i=0}^p \alpha_{5i} \Delta K_{t-i} + \beta_1 NRGDP_{t-1} + \beta_2 MPVA_{t-1} + \beta_3 MPVO_{t-1} \\ & + \beta_4 HCAP_{t-1} + \beta_5 K_{t-1} + \varepsilon_t \dots (3) \end{aligned}$$

Where: KRGP = Kenya real gross domestic product; NRGDP = Nigeria real gross domestic product, MPVA = Mobile payment value; MPVO = Mobile

payment volume; HCAP = Human capital (Education); K = Capital (Gross fixed capital formation). The selection of the variables are guided from the works of Marafa, 2022; Onwere & Oke, 2023; Adebisi, Zannu, & Dada, 2023 and Olofin, 2023.

Real GDP represents the total value of all goods and services produced in a country during a specific time period. It helps estimate the size and growth rate of an economy.

Mobile payment value refers to the money paid for products or services using portable electronic devices like tablets or cell phones. It can also be used to send money to friends and family.

Mobile payment volume measures the increase in mobile money payments made through portable devices.

Human capital represents the economic value of a worker’s skills, education, training, intelligence, health, and other factors. This study used secondary education as an indicator of human capital

Gross fixed capital formation includes tangible or intangible assets used in production processes for at least one year.

Lag Length Specification

To circumvent the issue of producing too large models, one of the following two information criteria

The Bayes information criterion (BIC)

$$BIC(p) = \log\left(\frac{SSR(p)}{T}\right) + (p+1)\frac{\log(T)}{T} \dots\dots\dots (4)$$

The Akaike information criterion

$$AIC(p) = \log\left(\frac{SSR(p)}{T}\right) + (p+1)\frac{2}{T} \dots\dots\dots (5)$$

3.3 Estimation Test

Unit root Test: Dickey and Fuller developed a regression test in 1979 to detect the presence of a unit root. They later expanded their test by adding lagged

terms to eliminate autocorrelation. The Augmented Dickey Fuller test equation is used for this purpose. The possible form of the ADF is given by the following equation.

$$\Delta y_t = a_0 + \lambda y_{t-1} + a_{2t} + \sum_{i=1}^p \beta_i \Delta y_{t-i} + \mu_t \dots \dots \dots (6)$$

Co-integration Test (Bounds Testing Approach of Pesaran et al 2001): The ARDL co-integration approach, developed by Pesaran and Shin in 1999 and Pesaran et al. in 2001, is used to analyse both long-term relationships and short-term dynamics between variables. This technique integrates short-term changes with the long-term equilibrium, ensuring that important long-term information is not overlooked (Pesaran & Shin, 1999; Pesaran et al., 2001).

Stability Test: Pesaran and Pesaran (1997) recommend using the CUSUM and CUSUMSQ tests by Brown et al (1975) to assess parameter stability, emphasising the importance of considering short run dynamics when testing for the stability of long run coefficients.

3.4 Sources of Data

This study will analyse quarterly data from 2010q1-2024q4 for Kenya and Nigeria, sourced from the World Development Indicators (WDI, 2025), Central Bank of Kenya (CBK, 2025), and Central Bank of Nigeria (CBN, 2025).

Table 1: Variables for Kenya and Nigeria

Variables	Label	Measure Units	Source
Kenya real gross domestic product	KRGDP	Total value of goods and services	CBK 2024
Nigeria real gross domestic product	NRGDP	Total value of goods and services	CBN 2024
Mobile payment value	MPVA	Money paid for products or services using devices like tablets or cell phones	CBK 2024 CBN 2024
Mobile payment volume	MPVO	Measures the increase in mobile money payments made through portable devices.	CBK 2024 CBN 2024
Human capital (education)	HCAP	Worker’s skills, education, training etc.	WDI 2024
Capital (gross fixed capital formation)	K	Tangible or intangible assets used in production processes	WDI 2024

Source: Authors’ compilation

4. RESULTS

4.1 Preliminary Analysis and Model Validation

Unit root

Table 2: Unit/Stationarity test for both Kenya and Nigeria

Var	Kenya				Nigeria			
	ADF 5%	Level diff	1st diff	Order of Inte-gration	ADF 5%	Level diff	1st diff	Order of Inte-gration
RGDP	-3.526609	-2.981155	-6.476447	I(1)	-3.508508	-2.23831	-13.54446	I(1)
MPVA	-3.504330	-0.060806	-8.155880	I(1)	-3.526609	-1.597607	-4.143002	I(1)
MPVO	-3.179617	-3.448321		I(0)	-3.526609	-1.878513	-6.060449	I(1)
HCAP	-3.502373	-2.476191	-7.148346	I(1)	-3.502373	-1.876969	-6.997554	I(1)
GFCF	-3.502373	-2.790947	-7.505528	I(1)	-3.508508	-2.734248	-3.530210	I(1)

Source: Authors’ computation using E-views 13

The unit root test indicates that the integration order aligns with the autoregressive distributed lag model (ARDL) requirements. Real gross domestic product, mobile payment value, mobile payment volume (Nigeria only), human capital, and gross fixed capital formation are integrated of order one, I(1), while only mobile payment volume (Kenya only) is integrated of order zero, I(0). Therefore, we move forward with the co-integration test (ARDL Bound test).

The ARDL Co-integration Bound test

Table 3: Kenya and Nigeria

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
Kenya		Asymptotic: n=1000		
F-statistic	32.88447	10%	2.2	3.09
K	4	5%	2.56	3.49
		2.5%	2.88	3.87
		1%	3.29	4.37
Nigeria		Finite Sample: n=50		
F-statistic	26.11560			
K	4			
Actual Sample Size	48			
		10%	2.372	3.32
		5%	2.823	3.872
		1%	3.845	5.15

Source: Authors’ computation using E-views 13

In Kenya, the F-statistics value is 32.88447 and the 5% critical value in Pesaran et al. (1999) ranges from 2.56 to 3.49. In Nigeria, the F-statistics value is 26.11560 and the 5% critical value in Pesaran et al. (1999) also ranges from 2.56 to 3.49. Since the F-statistics exceed the upper bound value for both countries, the nominal hypothesis (H0) cannot be accepted and the unconventional hypothesis (H1) is accepted. Therefore, there is a long-term relationship between digital mobile payment and other variables, leading to economic growth. To account for this long-run relationship, we estimate both the short run and the long run using the error correction model (ECM).

Leg Length Selection

Table 4: Leg Length Selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-2905.411	NA	2.83e+42	111.9389	112.1265	112.0108
1	-2631.645	484.3555	1.99e+38	102.3710	103.4967	102.8025
2	-2625.154	10.23598	4.17e+38	103.0829	105.1467	103.8741
3	-2612.094	18.08275	7.08e+38	103.5421	106.5440	104.6930
4	-2388.686	266.3711*	3.96e+35*	95.91101*	99.85103*	97.42152*

Using AIC we select lag 4 to estimate both the short-run and long-run estimation of the ARDL.

Source: Authors' compilation

4.2 Short-run Results (Kenya vs. Nigeria)

Table 5: Dependent variable: KRGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
D(KRGDP(-1))	0.035294	0.086953	0.405901	0.6872
D(KRGDP(-2))	-0.040498	0.094824	-0.427088	0.6719
D(KRGDP(-3))	-0.026373	0.088586	-0.297716	0.7676
D(KRGDP(-4))	0.299739	0.083939	3.570914	0.0010
D(KMPVA)	-1369.180	542.1910	-2.525272	0.0161
D(KMPVA(-1))	2881.168	529.4592	5.441718	0.0000
D(KMPVO)	3886.377	2369.279	1.640320	0.1096
D(KMPVO(-1))	-2968.175	2984.163	-0.994642	0.3265
D(KMPVO(-2))	9863.934	2659.722	3.708633	0.0007
D(KHCAP)	1856.568	692.7917	2.679836	0.0110
D(KGFCF)	1.46E-05	1.53E-05	0.955327	0.3458
C	3882517.	606627.9	6.400162	0.0000
R-squared	0.996959	Mean dependent var.		7820833.
Adjusted R-squared	0.996030	S.D. dependent var.		1176424.

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
S.E. of regression	74122.98	Akaike info criterion		25.47716
Sum squared resid.	1.98E+11	Schwarz criterion		25.94496
Log likelihood	-599.4518	Hannan-Quinn criter.		25.65394
F-statistic	1073.012	Durbin-Watson stat		1.517288
Prob.(F-statistic)	0.000000			

Source: Authors' computation using E-views 13

The short-term regression analysis of Kenya indicates that mobile payment value (current and lagged by one period), mobile payment volume (lagged by two periods), and human capital all have a significant impact on Kenya's economic growth (RGDP). On the other hand, gross fixed capital formation does not have a significant effect on economic growth. In the short term, a one per cent increase in the value of mobile payments leads to a decline in economic growth in the current period but contributes to an increase in economic growth in the subsequent period. Similarly, a one percent change in the volume of mobile payments increases economic growth in the previous period, while a one percent change in human capital boosts economic growth in the current period in the short term. The Adjusted R-square value indicates a 99% goodness of fit for the results, and the Durbin-Watson statistic of 1.517288 suggests the absence of autocorrelation or serial correlation.

Table 6: Dependent variable: NRGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
NRGDP(-1)	0.148477	0.110692	1.341360	0.1935
NRGDP(-2)	0.061685	0.119477	0.516293	0.6108
NRGDP(-3)	-0.019627	0.120068	-0.163462	0.8716
NRGDP(-4)	0.953634	0.116591	8.179322	0.0000
NMPVA	23547.99	7270.745	3.238732	0.0038
NMPVA(-1)	-16424.56	7658.958	-2.144489	0.0433
NMPVO	-0.028455	0.037016	-0.768710	0.4502
NMPVO(-1)	-0.123924	0.058547	-2.116678	0.0458
NMPVO(-2)	-0.221402	0.071133	-3.112492	0.0051
NMPVO(-3)	-0.707800	0.208093	-3.401358	0.0026
NMPVO(-4)	-0.770676	0.256820	-3.000837	0.0066
NHCAP	-12804.67	12902.26	-0.992436	0.3318
NHCAP(-1)	19989.67	16144.34	1.238185	0.2287
NHCAP(-2)	-13657.71	17406.11	-0.784651	0.4410
NHCAP(-3)	-5892.205	14886.26	-0.395815	0.6961
NHCAP(-4)	60224.81	13564.96	4.439733	0.0002
NGFCF	-12.39135	755.8262	-0.016394	0.9871
C	-5237416.	2589088.	-2.022881	0.0554

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
R-squared	0.992155	Mean dependent var.		67040000
Adjusted R-squared	0.986094	S.D. dependent var.		4745027.
S.E. of regression	559558.8	Akaike info criterion		29.60985
Sum squared resid.	6.89E+12	Schwarz criterion		30.36984
Log likelihood	-574.1970	Hannan-Quinn criter.		29.88464
F-statistic	163.6746	Durbin-Watson stat.		1.577833
Prob.(F-statistic)	0.000000			

Source: Authors' computation using E-views 13

The result above reveals that certain factors have a significant impact on Nigeria's economic growth in the short-run. Specifically, the present and past values of mobile payment, all past volumes of mobile payment and the human capital (lag 4) are significant. On the other hand, the present volume of mobile payment, present and past (up to lag 3) of human capital, and gross fixed capital formation are found to be insignificant in relation to economic growth in Nigeria. In terms of the effects, a one percent change in the values of mobile payment (both present and past) leads to increases and decreases in economic growth in the short-run, respectively. Similarly, a one percent change in the volume of mobile payment in the past results in a decrease in economic growth, while a one percent change in human capital in the past leads to an increase in economic growth in Nigeria in the short-run. Furthermore, the Adjusted R-square indicates a 98% goodness of fit of the result, suggesting a strong relationship between the variables. Additionally, the Durbin-Watson statistic of 1.577833 indicates the absence of auto-correlation or serial correlation in the data.

4.3 Long-run Results (ECM) (Kenya vs. Nigeria)

Table 7: Dependent variable: D(RGDP) (Kenya)

ECM Regression

Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(KRGDP(-1))	-0.232868	0.057037	-4.082741	0.0002
D(KRGDP(-2))	-0.273366	0.061114	-4.473061	0.0001
D(KRGDP(-3))	-0.299739	0.063221	-4.741100	0.0000
D(KMPVA)	-1369.180	446.8922	-3.063781	0.0041
D(KMPVO)	3886.377	1974.911	1.967875	0.0568
D(KMPVO(-1))	-9863.934	2179.071	-4.526669	0.0001
CointEq(-1)*	-0.731838	0.048821	-14.99035	0.0000

Variable	Coefficient	Std. Error	t-Statistic	Prob.
R-squared	0.850700	Mean dependent var.		84583.33
Adjusted R-squared	0.828851	S.D. dependent var.		167890.0
S.E. of regression	69456.38	Akaike info criterion		25.26882
Sum squared resid.	1.98E+11	Schwarz criterion		25.54171
Log likelihood	-599.4518	Hannan-Quinn criter.		25.37195
Durbin-Watson stat.	1.517288			

Source: Authors' computation using E-views 13

CointEq(-1) has a coefficient estimate of 0.731838, meaning 73.18% of disequilibrium movements are corrected within one period. The coefficient is highly significant with a t-statistic of -14.99035, suggesting a long-run relationship between digital mobile payment and economic growth in Kenya. A Durbin-Watson statistic of 1.517288 shows no serial correlation in the regression.

Table 8: Dependent variable: D(NRGDP) (Nigeria)

ECM Regression

Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(NRGDP(-1))	-0.995693	0.098919	-10.06575	0.0000
D(NRGDP(-2))	-0.934007	0.096525	-9.676365	0.0000
D(NRGDP(-3))	-0.953634	0.100795	-9.461150	0.0000
D(NMPVA)	23547.99	4448.310	5.293693	0.0000
D(NMPVO)	-0.028455	0.023292	-1.221641	0.2348
D(NMPVO(-1))	1.699877	0.126549	13.43261	0.0000
D(NMPVO(-2))	1.478476	0.112018	13.19850	0.0000
D(NMPVO(-3))	0.770676	0.160563	4.799832	0.0001
D(NHCAP)	-12804.67	9262.768	-1.382380	0.1807
D(NHCAP(-1))	-40674.89	8612.127	-4.722978	0.0001
D(NHCAP(-2))	-54332.60	9375.813	-5.794975	0.0000
D(NHCAP(-3))	-60224.81	9950.698	-6.052320	0.0000
CointEq(-1)*	-0.144170	0.010396	-13.86744	0.0000
R-squared	0.865091	Mean dependent var.		405000.0
Adjusted R-squared	0.805131	S.D. dependent var.		1144205.
S.E. of regression	505097.5	Akaike info criterion		29.35985
Sum squared resid.	6.89E+12	Schwarz criterion		29.90873
Log likelihood	-574.1970	Hannan-Quinn criter.		29.55831
Durbin-Watson stat.	1.577833			

Source: Authors' computation using E-views 13

CointEq(-1), which represents the ECM term, has an estimated coefficient of 0.143170. This means that approximately 14.32% of any imbalances are corrected within one time period. The coefficient is considered significant due to the high t-statistics of 13.86744. This suggests a long-term relationship between digital mobile payment and economic growth in Nigeria. The Durbin-Watson statistic of 1.577833 indicates that there is no serial correlation or autocorrelation in the regression.

4.4 Model Stability

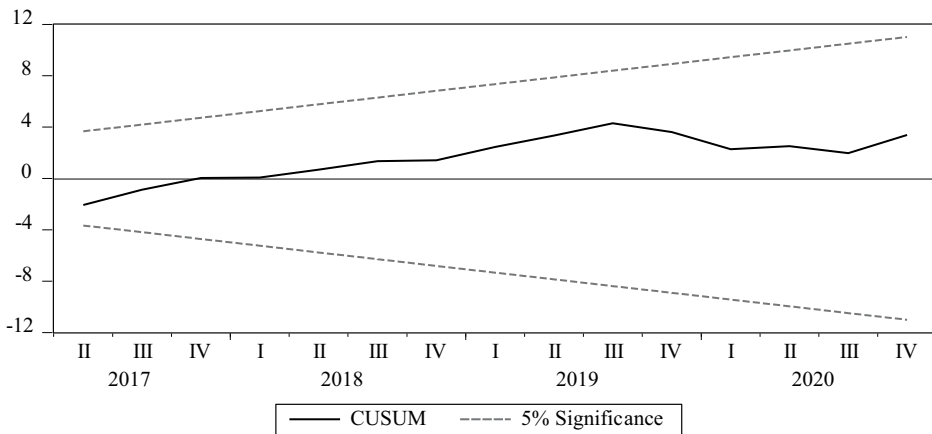


Figure 2: Model Stability
Source: Authors' compilation

The figure shows that the blue line lies between the 5% significant boundary so we can say the model is stable for both Kenya and Nigeria.

5. DISCUSSIONS OF FINDINGS, CONCLUSIONS AND POLICY DIRECTIVES

The study reveals a strong connection between mobile payment adoption and economic growth in Kenya and Nigeria. In Kenya, mobile payments have a notable impact on economic growth in both the short-run and long-term. Similar findings are observed in Nigeria, where mobile payments adoption significantly influences economic growth. These results align with the findings of previous studies conducted by Tiony (2023), Olofin (2023), Hussein and Ritzen (2021), Zwingina, Onoh, and Chukwu (2023), and Marafa (2022). However, the results contradict the findings of Adebisi, Zannu, and Dada (2023), Appah, Tebepah, and

Newstyle (2023), and Onwere and Oke (2023), suggesting that the relationship between mobile payments adoption and economic growth in Kenya and Nigeria varies in the short-run and long-term.

Kenya and Nigeria demonstrate a strong link between mobile and digital payment systems and economic growth. Innovations in mobile money and digital banking have improved transaction efficiency, increased financial inclusion, reduced cash dependency, and stimulated business activities. Data shows that digital payments are vital for SME growth, rural economic integration, productivity enhancement, and financial system development in both countries. The M-Pesa model in Kenya showcases the impact of telecom-based financial innovation, while Nigeria's fintech ecosystem underscores the importance of digital entrepreneurship and instant payments for economic advancement. Nonetheless, challenges like infrastructure issues, cybersecurity risks, and regulatory barriers remain significant hurdles for policymakers to address to ensure inclusive digital financial progress.

A comparative study was conducted to examine the influence of digital mobile adoption on economic growth in Kenya and Nigeria. The study utilised quarterly data and ARDL estimation. Data from the Central Bank of Kenya (CBK, 2025) statistical bulletin, Central Bank of Nigeria (CBN, 2025) statistical bulletin, and World Bank Development Indicator (WDI, 2025) annual data were used. The study revealed a mixed relationship between mobile payments adoption and economic growth in the short term, with both positive and negative effects. In the long term, there was a correlation between the two variables for both Kenya and Nigeria. This implies that mobile payment adoption has had both positive and negative impacts on the economic growth of both countries, and it is expected to continue influencing the future. Based on the findings, the study directs that:

1. The deposit money bank and fintech industries need to work closely with network providers like MTN, Airtel, and Globacom in Nigeria, and Safaricom, Airtel, Equitel, and Telkom Kenya in Kenya to ensure a reliable network in both urban and rural areas for mobile app usage.
2. Enhancing public perception of the ease of use, trust, affordability, usefulness, security, and transparency of mobile money services.
3. Collaboration is essential among regulators, mobile network operators (MNOs), fintech companies, and traditional banks to deliver fast and efficient mobile financial services in Kenya and Nigeria.

ACKNOWLEDGEMENT

We express our sincere appreciation to the [Central Bank of Kenya \(2025\)](#), [Central Bank of Nigeria \(CBN, 2025\)](#), and the World Bank Indicator (WDI, 2025) for their invaluable contribution in providing the data utilised for analysis in this research. Furthermore, we would like to extend our gratitude to the Ahrefs AI tools for their assistance in grammatical corrections.

Conflict of Interest

The authors declare there is no conflict of interest.

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ДИГИТАЛНО МОБИЛНО ПЛАЋАЊЕ И ЕКОНОМСКИ РАСТ У КЕНИЈИ И НИГЕРИЈИ: УПОРЕДНА АНАЛИЗА

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САЖЕТАК

Технологија мобилног плаћања омогућава дигиталне трансакције путем паметних телефона и таблета користећи методе попут NFC-а, QR кодова и апликација за плаћање. Ова иновација омогућава потрошачима да купују робу и услуге без физичких картица или готовине. Очекује се да ће глобално тржиште мобилних плаћања, процијењено на 2,98 билиона долара у 2023. години, порастати на 27,81 билион долара до 2032. године мијењајући начин на који купци комуницирају са предузећима и управљају финансијама. У Нигерији и Кенији, мобилни телефони служе као витални алати за финансијске услуге, електронску трговину и забаву. Овај рад има за циљ да упореди усвајање дигиталних мобилних плаћања и њихов утицај на економски раст у овим земљама. У раду су коришћени квартални подаци: од првог квартала 2010. до четвртог квартала 2024. године из централних банака Кеније и Нигерије, те модел ауторегресивног дистрибуираног кашњења (ARDL) за анализу. Тестови јединичних коријена показали су да су варијабле интегрисане од $I(0)$ и $I(1)$, а тестови коинтеграције потврдили су дугорочне везе. Резултати откривају да мобилна плаћања значајно утичу на економски раст у обје земље, са мјешовитим краткорочним ефектима и позитивном дугорочном корелацијом. Студија препоручује сарадњу између регулатора, оператера мобилних мрежа, финансијско-технолошких компанија и банака како би се унаприједиле мобилне финансијске услуге у обје земљама.

Кључне ријечи: дигитално мобилно плаћање, економски раст, Кенија, Нигерија, ARDL.