Information and Communication Technology (ICT) and Economic Growth of Nigeria

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ABSTRACT

This study examined the relationship between information and communication technology (ICT) and Nigerian economy. The objectives were to determine the extent of relationship between ICT proxies which are mobile phone penetration, number of broadband users, and Nigeria's economic growth proxied by GDP. Ex-post facto research design was adopted. Data were collected from Central Bank of Nigeria statistical bulletin and Nigeria Communication Commission (NCC) report cards from 2009 to 2022. Analyses were carried out using Least Square (OLS) regression. Findings revealed that Mobile Phone penetration has negative and statistically insignificant relationship with Nigeria's GDP while that of number of broadband users have positive but statistically insignificant relationship with Nigeria's GDP. The study concluded that ICT penetration in Nigeria has not yet translated into a statistically significant in short-run or has it established long-run contribution to economic growth through mobile phone penetration and broadband usage alone**.** However, it does not imply that ICT is unimportant to economic development; rather, suggest that the economic benefits of ICT depend on the quality, affordability, reliability and productive utilisation of digital infrastructure. It was recommended that the Mobile phone penetration and Broadband infrastructure should be integrated into productive sectors or economic activities among others.

Keywords: Information communication technology, mobile phone penetration, number of broadband users, and economic growth.

INTRODUCTION

A world with men but without technology could have been tedious, tiresome and slow. Information and communication technologies (ICTs) are electronic technologies used for information storage and retrieval. Information and communication technology (ICTs) is electronic technology used for communicating information storage and retrieval (Wainaina, 2025). Nowadays the business world is changing at a faster pace. The reasons given for this is globalization, high Information Technology investments and the rapid pace of technological change (Ogunlana et al., 2024).

Since its advent, various forms of ICT have been developed not only to improve the efficiency of the organisation but also to improve the performance of employees and these includes i-Pads, fax machines, Computer Aided Design, electronic books (e-books), i-cloud, automated teller machine (ATMs), point of sales terminal (POS), mobile banking, online banking, Windows DOS, interactive television banking, Electronic Check Conversion, teleconferencing, emails etc. (Adegbie et al., 2020).

Most countries have experienced a wave of technological advancement through internet usage, mobile phones, broadband adoption, or fixed telephones (Cariolle, 2021). Studies have shown that ICT contributes to increased productivity leading to more efficient business operations, faster data processing, and improved inventory management, reducing transaction costs and boosting overall productivity (Abdullahi & Adamu, 2023; Azu et al., 2025; Omeni-Pius, 2025). Government initiatives and the growing tech ecosystem are attracting partnerships with foreign investors, further stimulating growth and innovation in the ICT sector. This

digital revolution has thus created new employment opportunities, especially in sectors leveraging technology and fostering digital literacy (Obiajulu & Egbue, 2024).

In recent years, Nigeria has made significant strides in ICT adoption, making it a pivotal component of the nation's economic framework. The Nigerian Bureau of Statistics (2024) reported that the ICT sector contributed approximately 20% to Nigeria's real Gross Domestic Product (GDP) in the second quarter of 2024, highlighting its growing importance in the country's economic diversification efforts. This surge is largely attributed to increased internet penetration, mobile technology adoption, and government-driven initiatives aimed at digital transformation (International Trade Administration, 2024). The ICT sector has become a major driver of non-oil revenue, reducing the country's dependence on crude oil exports and improving overall economic resilience (Markwide Research, 2024). The expansion of the digital technology industry in recent years demonstrates the strong potential to serve as a catalyst for economic growth especially as the Government of Nigeria seeks to diversify Nigeria's economy away from reliance on the oil and gas industry which was traditionally the mainstay of the economy. With over 150 million mobile subscribers, the country has become a mobile-first economy, leveraging digital solutions for financial services, e-commerce, and e-government applications (Ndukwe et al., 2023).

ICT has also contributed to transfusion of financial inclusion in various economies such as mobile money platforms and have transformed financial services by offering accessible and secure transactions, even for unbanked populations. These platforms have significantly boosted productivity, especially in rural areas with limited formal banking systems (Wainaina, 2025). The advances in ICT enhances financial inclusion even as digital platforms are improving access to financial services for a wider population, which is crucial for economic participation and growth (Girma & Huseynov, 2024). Mobile banking and payment solutions such as USSD based transactions and fintech applications, have promoted financial inclusion and economic participation, particularly among the unbanked population (Central Bank of Nigeria, 2024). This mobile revolution has also spurred entrepreneurship and digital innovation, with start-ups in fintech, agritech, and e-health gaining traction in both local and international markets (UNCTAD, 2024). Thus, this study takes more in-depth look at application of information communication technology and Nigeria's economic performance.

Statement of the problem

In the present globalization scenario, information technology is the most important and controversial term. It is the most powerful technology which is fast, quick and accurate in its operation, as such information technology is expected to provide management with quality information that will enhance their decision making and improve their operational performance, however, as argued by most literatures, it is important to note that despite the positive impacts, there are still challenges to overcome for maximizing the benefits of the ICT revolution in Nigeria. These challenges include improving infrastructure, addressing the digital divide, promoting digital literacy, ensuring cybersecurity, and creating an enabling regulatory environment.

Increased use of information and communication technology (ICT) such as computers, mobile phones, Internet, and other associated technologies are the routes which gave emergence to lot of constructive work as well as destructive work. These destructive activities are considered as "electronic crime" which includes spamming, mobile money transfer hanging, credit card fraud, Money laundering, Phishing, Identity theft, denial of service and others causing problems in the society especially between business owners and customers who are affected. These not only affect the efforts of management at ensuring high returns, it also affects overall operations. It is based on this premises stated above, that this study is initiated to investigate the impact of information communication technology on the Nigerian economy. The development of technology, especially Information and Communication Technology, has had significant effects on various economies globally and other aspects of human life in recent decades. While existing studies have established a potential link between ICT adoption and economic development, findings remain inconclusive, particularly in the context of developing economies. Previous research presents mixed results, often influenced by variations in econometric models, regional contexts, and data limitations. For instance, some studies highlight the transformative potential of ICT in fostering economic growth, while others indicate a lack of significant impact

or even negative outcomes. This inconsistency creates uncertainty for policymakers and stakeholders seeking to harness ICT for sustainable development in Nigeria.

The relationship between telecommunication infrastructure and economic growth has drawn significant attention from economists, scholars, and policymakers. In an era where connectivity is increasingly recognized as a fundamental driver of economic development, understanding the dynamics between telecommunication infrastructure and growth becomes paramount. Thus, this present study looks at another dimension of ICT and how it impacts on Nigeria's economy.

Objectives of the study

The main aim of this study is to ascertain the effect of information communication technology (ICT) on the growth of the Nigerian economy. The specific objectives are:

i. to determine the extent of relationship between mobile phone penetration and Nigeria's GDP.
ii. to evaluate the relationship between number of broadband users and Nigeria's GDP.

Research questions

The following questions have been raised to guide the study.

i. What is the extent of relationship between mobile phone penetration and Nigeria's GDP?
ii. What relationship exists between number of broadband users and Nigeria's GDP?

Research hypotheses

The following hypotheses were formulated to guide the study:

H_{01}: Mobile phone penetration has no significant relationship with Nigeria's GDP.

H_{02}: There is no significant relationship between number of broadband users and Nigeria's GDP.

REVIEW OF RELATED LITERATURE

The following concepts information communication technology and economic growth are reviewed below:

Concept of information communication technology:

The term "Information and communication technologies (ICTs) is defined as a diverse set of technological tools and resources used to communicate and create, disseminate, store, and manage information (Mohammed et al., 2019).). ICTs encompass a range of rapidly evolving technologies and they include telecommunication technologies (telephony, cable, satellite, TV and radio, computer-mediated conferencing, video conferencing) as well as digital technologies (computers, information networks (internet, World Wide Web, intranets and extranets) and software applications. The focus of ICT is on telecommunication and computerization it implies the convergence of computing and communication (Telecommunication) technologies and its uses or application for global internet, Extranet World Wide Web (WWW), Visual reality cyberspace-the New Digital Mentality and culture. Information Communication and Technology comprises the physical devices and software that link (connect) various computer hardware components and transfer data from one physical location to another. Connectivity has facilitated the use of electronic delivery financial transaction (Yauri, 2021).

In business, ICT is often categorized into two broad types of product:

1. The traditional computer-based technologies (things you can typically do on a personal computer or using computers at home or at work); and

2. The more recent and fast-growing range of digital communication technologies (which allow people and organizations to communicate and share information digitally) (Solomon, 2018).

At the heart of technology lie two main or branches of technology: computing and telecommunication (Nwankwo, 2022). The technologies covered are the computer system, Internet/electronic mail (e-mail), mobile phone, and fax machine.

Economic growth

Economic growth has been defined in two ways. In the first place, economic growth is defined as sustained annual increases in an economy's real national income over a long period of time. In other words, economic growth means rising trend of net national product at constant prices according to (Siyanbola, 2013). This definition has been criticized by some economists as inadequate and unsatisfactory. They argue that total national income may be increasing and yet the standard of living of the people may be falling. This can happen when the population is increasing at a faster rate than total national income.

For instance, if national income is rising by 1% per year and population is increasing at 2% per year, the standard of living of the people will tend to fall. This is so because when population is increasing more rapidly than national income, per capita income will go on falling. Per capita income will rise when the national income increases faster than population (Ako, 2016).

Therefore, the second and better way of defining economic growth is to do so in terms of per capita income. According to the second view by Ewim (2015) economic growth means the annual increase in real per capita income of a country over the long period. Thus, Professor Arthur Lewis says that economic growth means the growth of output per head of population. Since the main aim of economic growth is to raise the standards of living of the people, therefore the second way of defining economic growth which runs in terms of per capita income or output is better (Ewim, 2015).

Another point which is worth mentioning in regard to the definition of economic growth is that the increase in national income or more correctly increase in per capita income or output, must be a 'sustained increase' if it is to be called economic growth. By sustained increase in per capita income we mean the upward or rising trend in per capita income over a long period of time. A mere short-period rise in per capita income, such as that occurs over a business cycle, cannot be validly called economic growth (Nduka, 2016).

Economic growth refers to the sustained increase in a country's productive capacity, leading to higher national output and improved living standards (Acemoglu & Robinson, 2023). It is commonly measured by the rise in real Gross Domestic Product (GDP), which accounts for the total value of goods and services produced in an economy over a given period, adjusted for inflation. Economic growth is essential for fostering job creation, reducing poverty, and enhancing overall economic stability. Countries experiencing consistent economic growth typically exhibit increased industrialization, higher levels of investment, and advancements in technology and innovation (World Bank, 2023). The drivers of economic growth vary across nations and are influenced by factors such as capital accumulation, labor force expansion, technological progress, and institutional frameworks (Rodrik & Stiglitz, 2023). In developing economies, such as Nigeria, economic growth is closely linked to natural resource exploitation, government policies, and infrastructural development (NBS, 2023). However, the sustainability of this growth depends on economic diversification, human capital development, and sound macroeconomic policies.

ICT and economic growth

According to Bakare et al. (2022), information and communication technology has the capacity to produce higher interactive potentials for users to develop individual intellectual and creative ability. Nowadays the business world is changing at a faster pace. Reasons for this, is globalization, high information technology (IT) investments and the rapid pace of technological change in combination with escalating costs of research and development (Al-nadesh et al., 2022). Advances in information technology (IT) have transformed many firms and small and medium scale enterprises are not exempted. Research shows that ICT is a tool for economic

diversification because it serves as a major driver of non-oil revenue, helping to reduce country like Nigeria's reliance on crude oil exports and supporting the nation's diversification efforts (Osanebi & Odeke, 2025). The growth of the ICT sector is fostering a vibrant ecosystem of digital entrepreneurs, supported by government initiatives like tech hubs and innovation programs.

Large number of companies and institutions now use these ICT to run their inventory, control accounting, manage human resources, etc (Teniola & Fasiku, 2021). Businesses are no longer relying on trails of paper work to conduct every day transactions. All staff in modern organisations needs to be able to search and gather data from different sources, analyse them, select the relevant ones and organize them in such a manner as to allow them make decisions based on the information (Igbaekemen, 2020).

Studies have shown that ICT capabilities enhance service reliability, reduce transaction errors and increase consistency in performance (Edeh et al., 2020). Furthermore, it has been observed that ICT can contribute to service quality through better customized services, and creating knowledge by identifying and sharing organizational expertise. As the COVID-19 pandemic devastated the global economy in 2020, organizations looked for ways to carry on with businesses to ensure survival. One of the major strategies adopted was online presence to ensure customers' demands are met. ICT therefore created an opportunity for businesses to remain in operations.

Mobile phone subscriptions and economic growth

Mobile cellular telephone subscriptions refer to the total number of active mobile phone connections in a country, including prepaid and postpaid users. This metric is an essential indicator of ICT adoption, as it reflects the extent of mobile communication penetration among the population (World Bank, 2023). The increasing adoption of mobile telephony has transformed various sectors, including banking, healthcare, and education, by providing access to digital services and online platforms (Adebayo & Yusuf, 2023).

Nigeria has experienced substantial growth in mobile cellular subscriptions due to the affordability of mobile phones and the expansion of network coverage to rural areas (Akinola & Ogunde, 2023). According to the Nigerian Communications Commission (2023), the country had over 220 million mobile subscribers as of 2023, making it one of the largest mobile markets in Africa. The widespread adoption of mobile phones has enabled financial inclusion through mobile money services and facilitated digital commerce, leading to economic empowerment (Oluwaseun & Chukwu, 2022). Recent report shows 169.3 million subscriptions by July 2025, according to The Global Economy and NCC.gov.ng respectively. This surge is driven by technological advancements like 3G, 4G, and 5G networks, increasing the number of mobile and smartphone users across the country (NCC, 2025).

Theoretical framework

Innovation diffusion theory

The innovation diffusion theory was propounded by Everett Rogers in 1962 as it seeks to explain how, why and at what rate new ideas and technology spread in corporate organizations and in the society. Rogers argues that diffusion is the process by which technology innovation is communicated over time among the participants such as employees in a social system.

According to Shy (1997), diffusion theory posits five characteristics of innovations that affect their diffusion: relative advantage (the extent to which a technology offers improvements over currently available tools), compatibility (its consistency with social practices and norms among its users), complexity (its ease of use or learning), trialability (the opportunity to try an innovation before committing to use it), and observability (the extent to which the technology's outputs and its gains are clear to see). Diffusion studies have demonstrated that innovations affording advantages, compatibility with existing practices and beliefs, low complexity, potential trialability, and observability, will be more extensively and rapidly diffused than an innovation with the cluster of opposite characteristics. In order words, the introduction of technology in organizational activities can afford employees more innovative, carry out their work with speed and provide quality services.

Innovation according to the theory is doing things in new ways by adopting technology to enhance employee skills in carrying out organizational functions such as management, accounting, financing and distribution.

Endogenous growth theory

This study is anchored on the Endogenous Growth Theory, developed by Romer (1990) and Lucas (1988). Unlike classical growth models that attribute economic expansion to external factors, the Endogenous Growth Theory emphasizes the role of human capital, innovation, and knowledge as internal drivers of sustained economic growth. The theory asserts that investmentin technology, education, and research and development (R&D) generates increasing returns, leading to long-term economic prosperity (Romer, 1990).

Nigeria's ICT-driven economic growth aligns with the Endogenous Growth Theory, as technological advancements have significantly improved productivity across various sectors. The proliferation of ICT hubs like Co-Creation Hub (CcHub), Start-up Nigeria, and the Lagos Innovation Council showcases how investments in digital technology stimulate economic development. Furthermore, the rise of e-learning platforms like uLesson and EdTech startups demonstrates the interplay between ICT and human capital development (Bello & Ogunleye, 2023). The decision to anchor this study on the Endogenous Growth Theory is justified by Nigeria's increasing reliance on technology and knowledge-based industries. The theory underscores the need for sustained investment in ICT infrastructure, digital literacy, and R&D to achieve longterm economic growth. However, to fully harness ICT's potential, Nigeria must address barriers such as policy inconsistencies, inadequate funding, and digital inequality (Osanebi & Odeke, 2025). Government policies should focus on enhancing digital skills, providing incentives for tech startups, and improving broadband penetration to ensure ICT remains a robust driver of economic development.

Empirical review

Olaoye and Olaofe-Obasesin (2019) examined the impact of information technology on corporate organizations performance in Nigeria. The study used questionnaire as source of data while results were presented on average, variance and standard deviation. The target respondents constitute specialist in the field of information technology, specifically Lagos state. Data were analyzed with the one way ANOVA technique. Findings from the research depicted information technology have a significant impact on corporate organizations performance in Nigeria. It recommended that corporate organizations must prioritize training of personnel and invest massively on IT for efficiency in operations.

Abdullahi and Adamu (2023) examined the short-run and long-run impact of ICT on economic growth in Nigeria using quarterly time series data from 1981 to 2021. The autoregressive distributed-lag (ARDL) model provided the analytical framework for the study. Findings from the ARDL model suggested ICT and FDI positively impacted on economic growth in Nigeria. On the other hand, trade openness has no impact on Nigeria's economic growth. The study found that ICT remains the credible technique of molding growth potentials in Nigeria. Therefore, the study concluded that information and communication technology (ICT) impacts positively on economic growth in Nigeria. The study recommended increase in the expenditure on ICT infrastructure supporting it.

Alao-Owunna and Michael (2023) examined the impact of information communication technology, using the internet usage and telephone subscription as a proxy on economic growth in Nigeria between 1996 and 2020. Auto Regressive Distribution lag (ARDL) method of estimation was used to achieve the objective of the study. Empirical findings established that, there exists a relationship between internet usage and telephone subscription on economic growth in Nigeria. Hence, the result showed that mobile telephone subscription has a positive and significant effect on economic growth both in short run and long run, while Internet Usage revealed a negative and insignificant relationship with the economic growth in Nigeria. Though it was expected that the result for Internet Usage should be positive and significant but it was otherwise which attributed to numerous problems facing the Nigerian economy such as lack of power supply, high poverty lever and high ICT illiteracy rate. The key policy implication drawn from the result is that the underlined problems facing the economy need immediate and accurate intervention to experience the true dividend of internet access and its usage.

Ojeaburu and Ogbonna (2025) explored the relationship between the usage of Information and Communication Technology (ICT) and the economic growth of Nigeria. The data used for this study was obtained from the World Bank, Central Bank of Nigeria (CBN) Statistical Bulletin, and other internet sources. The primary objective of this study is to evaluate the impact of the import and export of ICT on Nigeria's economic growth. The findings demonstrated that the use of ICT is mainly prevalent in cloud accounting and ICT facilities in the oil and gas industry and banking sector. At the same time, ICT imports and exports in Nigeria's entrepreneurship businesses were relatively insignificant. The study concluded that Nigerian entrepreneurs use inadequate ICT facilities mainly due to the need for more information technology knowledge, especially cloud accounting systems, which are relatively new and unfamiliar to most Nigerian entrepreneurs. The study recommended that the government should use relevant agencies to create greater ICT awareness and capacity building among Nigerian entrepreneurs.

Wainaina (2025) investigated the impact of Information and Communication Technology on economic growth in Subsaharan countries.The study analyzed panel data from 46 SSA countries over the 2000–2022 period. It collected panel data between 2000 and 2022 from 46 SSA countries. It employed a fixed-effects model to explore the relationship between Information and Communication Technology indicators, including mobile phone penetration, broadband subscriptions, internet usage, and real Gross Domestic Product.Study findings revealed that mobile phone subscribers per 100 people exhibited a statistically significant impact on economic growth. Also, fixed-broadband subscriptions had a significant positive association with real GDP. Fixed telephone subscriptions revealed a negative relationship, signaling a shift from traditional telephony to mobile technology. However, the percentage of persons using the Internet showed a positive but statistically insignificant impact on economic growth. Policymakers in SSA should prioritize investments in digital infrastructure, particularly in broadband and mobile technologies, to foster economic growth.

METHODOLOGY

This study adopted ex-post facto research design as it involves the use of time series data to determine the economic relationship between two or more variables and such data have already been documented thus cannot be manipulated. Secondary data was mainly used in this study, the sources used in this study are financial statements, journals and textbooks.

Data utilized was extracted from Statistical Bulletin of Central Bank of Nigeria (CBN) and report of Nigeria Communication Commission (NCC). The time frame considered for this study is from 2009 to 2022, which is fourteen years, this is a period Nigeria started embracing information technology in its fullest form. The dependent variable of the study is economic growth proxied by Gross Domestic Product (GDP). The independent variable is Information communication technology proxied by mobile phone penetration, and number of broadband users.

H_{01}: Mobile phone penetration has no significant relationship with Nigeria's GDP.

H_{02}: There is no significant relationship between number of broadband users and Nigeria's GDP.

The model is in the stated hypotheses are expressed in the following functions:

$y = f(x_1, x_2, x_3, x_4)$

Where y= dependent variable and x= independent variable

That is:

GDP = f (MPP, NBU)

$GDP = a_0 + a_1 MPP + a_2 NBU + e$ …….. eqn 1

Where

GDP = Gross Domestic Product

MPP= Mobile phone penetration

NBU= Number of broadband users

a_0 = This represent estimate of the constant

a_1 a_2 = These represents estimate of the independent variables

Data analysis technique

Regression analysis was employed to establish the relationship between dependent and independent variables. The study made use of econometric approach. The ADRL and Least Squares techniques were employed in obtaining the numerical estimates of the co-efficient in different equation in the model.

Data analysis

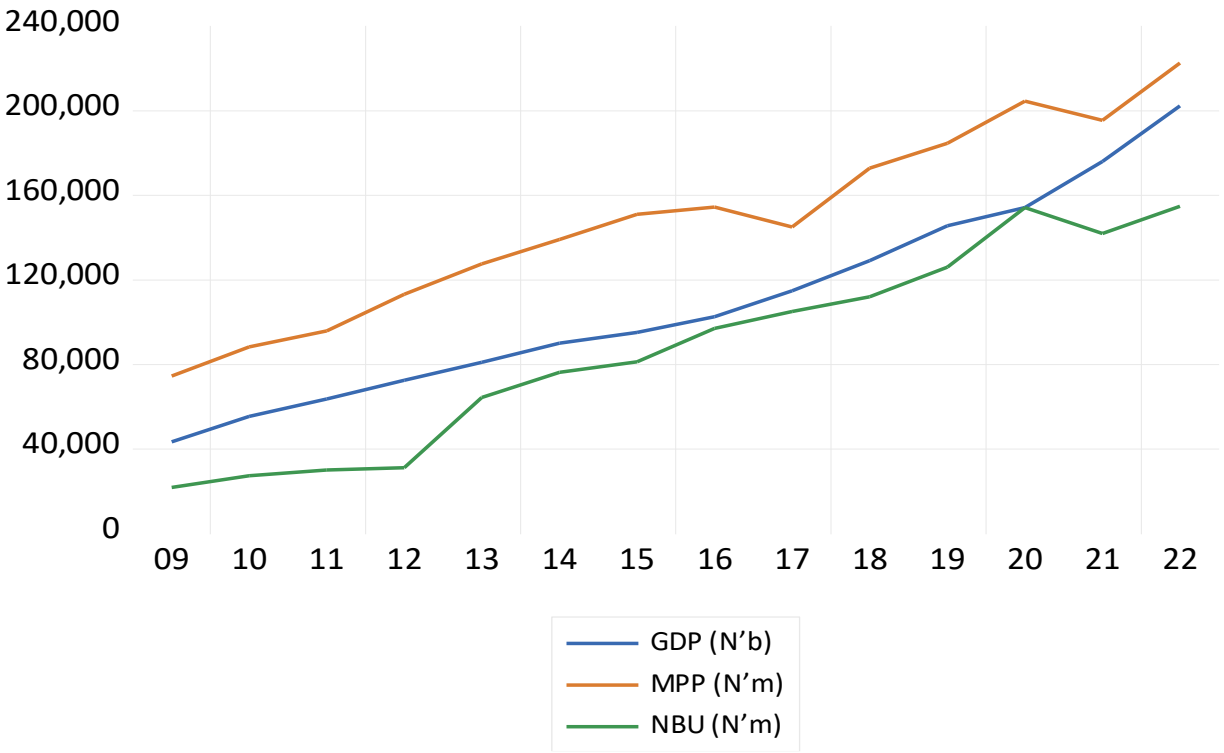


Figure 1: Graphical representation of the series

The graphical representation of the series shows that all the series witnessed an upward trend over the period under review which suggests that there is increasing level of penetration of ICT in Nigeria.

Table 4.1: Correlation matrix

	GDP	MPP	NBU
GDP	1.000000	0.969845	0.958230
MPP	0.969845	1.000000	0.978440
NBU	0.958230	0.978440	1.000000

Source: ***Author's computation***

The correlation matrix in table 4.1 shows the correlation between the independent variables in a matrix form. It shows that all the independent variables had positive relationship between one another. For instance, MPP

showed a positive value of 0.978440 with NUB while NBU showed a positive value of 0.978440 with MPP. The highest value in the matrix is 978440(NBU; MPP).

Table 4.2: Descriptive statistics

	GDP	MPP	NBU
Mean	109033.0	147822.4	87429.24
Median	98876.57	148038.4	89196.37
Maximum	202365.0	222571.6	154847.9
Minimum	43461.46	74518.26	21915.50
Std. Dev.	47192.65	45082.98	47668.05
Skewness	0.497764	-0.0172	-0.0231
Kurtosis	2.266378	1.990944	1.680862
Jarque-Bera	0.892080	0.594639	1.016315
Probability	0.640158	0.742807	0.601603
Sum	1526462.	2069513.	1224009.
Sum Sq. Dev.	2.90E+10	2.64E+10	2.95E+10
Observations	14	14	14

Source: ***Author's computation***

The table 4.2 which depicts the descriptive statistics, MPP has a mean value of147822.4 and a maximum value of 222571.6, NBU has a mean value of 87429.24 and a maximum value of 154847.9 while. GDP has mean value ₦109033.0b and a maximum value of #202365.0b.

The Jarque-Bera statistic indicates that GDP, MPP and NBU have a prob. value of 0.640158, 0.742807, and 0.601603 respectively which implies that they are normally distributed.

Table 4.3: Augmented Dickey-Fuller Unit Root Test

Variables	Prob. Value 5%	ADF T-Statistics	Order of Stationarity	Remark
GDP	0.0153	-3.927890	1 (2)	Stationary
MPP	0.0024	-5.016229	1 (1)	Stationary
NBU	0.0440	-3.966450	1 (0)	Stationary

Source: Author's Computation (2026)

Table 4.3 presents the results of the unit root tests conducted to determine the order of stationarity of the variables employed in the study. Using the Augmented Dickey-Fuller (ADF) test, the results indicate that the variables are integrated at different orders, with GDP, MPP and NBU being stationary at the second difference, first difference and level, respectively, that is, I(2), I(1) and I(0). The mixed order of integration necessitated an appropriate transformation of the I(2) variable by taking its first difference before estimating the Autoregressive Distributed Lag (ARDL) model. This transformation was undertaken to ensure that none of the variables entered the ARDL model as I(2), since the conventional ARDL bounds-testing approach is applicable when the variables are integrated at I(0) and/or I(1), but not I(2). Following the transformation, the ARDL model was employed to investigate the existence of a long-run equilibrium relationship among the variables.

ARDL Long Run Form and Bounds Test

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	

F-statistic	2.104186	10%	2.63	3.35
K	2	5%	3.1	3.87
		2.5%	3.55	4.38
		1%	4.13	5

The ARDL Bounds Test was employed to examine the existence of a long-run equilibrium relationship among GDP growth, MPP and NBU. The computed F-statistic of 2.1042 was lower than the lower-bound critical values at both the 5% and 10% significance levels. Specifically, using the finite-sample critical values, the F-statistic was lower than the 5% lower-bound value of 3.478 and the 10% lower-bound value of 2.845. Consequently, the null hypothesis of no levels relationship could not be rejected. This indicates that there is no evidence of a long-run cointegrating relationship among GDP growth, MPP and NBU over the study period. Therefore, the estimated levels coefficients should not be interpreted as evidence of long-run effects, and estimation of a conventional error correction model is not warranted on the basis of the Bounds Test.

The analysis subsequently focused on the short-run dynamics among the variables, resulting to transforming 1(2) and 1(1) variable to 1(0), followed by appropriate diagnostic and stability tests.

Table 4.4: Augmented Dickey-Fuller Test of TransformedGDP & MPP Unit Root Test

Variables	Prob. Value5%	ADF T-Statistics	Order of Stationarity	Remark
D(GDP,2)	0.0153	-3.9279	1 (0)	Stationary
DMPP	0.0024	-5.0162	1 (0)	Stationary
NBU	0.044	-3.9665	1 (0)	Stationary

Source: Author's Computation (2026)

Table 4.4 shows the result of differenced 1(2) and 1(1) unit root test results of 1(0), thus making Least Squares appropriate model to short run dynamics for the variables..

Table 4.5: Least Squares result

Dependent Variable: D2GDP				
Method: Least Squares				
Date: 09/01/26 Time: 09:46				
Sample (adjusted): 2011 2022				
Included observations: 12 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DMPP	-0.2261	0.11941	-1.8936	0.0908
NBU	0.04278	0.03315	1.29053	0.229
C	-468.28	3697.03	-0.1267	0.902
R-squared	0.35648	Mean dependent var		1190.14
Adjusted R-squared	0.21348	S.D. dependent var		5320.51
S.E. of regression	4718.56	Akaike info criterion		19.9687
Sum squared resid	2.00E+08	Schwarz criterion		20.0899
Log likelihood	-116.81	Hannan-Quinn criter.		19.9238
F-statistic	2.4928	Durbin-Watson stat		2.27626
Prob(F-statistic)	0.13757			

Source: *E-views Software*

The coefficient of **DMPP is -0.226119**, indicating an inverse relationship between changes in MPP and the second difference of GDP. Thus, a one-unit increase in the first difference of MPP is associated, on average, with a **0.226-unit decrease in D2GDP**, holding NBU constant. However, the probability value of **0.0908** is greater than 0.05. Therefore, the effect is **not statistically significant at the 5% level**. At the 10% level, however, the relationship is marginally significant because 0.0908 < 0.10.Similarly, NBU has a coefficient of **0.042778**, suggesting a positive relationship with D2GDP. A one-unit increase in NBU is associated with approximately a **0.043-unit increase in D2GDP**, ceteris paribus. Nevertheless, the probability value of **0.2290** exceeds 0.05. Hence, the effect of NBU on GDP is **statistically insignificant**.

The Durbin-Watson statistic of 2.276255 is reasonably close to 2, suggesting that there is no obvious evidence of first-order serial correlation in the residuals.

Test of hypotheses

Hypothesis one

H_{01}: Mobile phone penetration has no significant relationship with Nigeria's GDP

H_{a1}: Mobile phone penetration has significant relationship with Nigeria's GDP.

The model in table 4.5 shows that Mobile phone penetration and GDP are negatively related as indicated by its coefficient value of -0.226119 which implies that an increase in mobile phone penetration level leads on average, with a 0.226-unit decrease in GDP. The t-Statistics for MPP is -1.893619 with aprob.-value of 0.0908 which implies that the null hypothesis is not rejected that mobile phone penetration has no significant relationship with Nigeria's GDP but at 10% sig. level mobile phone penetration has moderate significant relationship with Nigeria's GDP

Hypothesis two

H_{02}: There is no significant relationship between number of broadband users and Nigeria's GDP.

H_{a2}: There is significant relationship between number of broadband users and Nigeria's GDP.

Number of broadband users has a coefficient value of 0.042778 which indicates a positive relationship with GDP. In other words, the higher the number of broadband users the higher the GDP. The t-Statistics for NBU is 1.290526 with a prob.-value of 0.2290 which impliesthat the null hypothesis is not rejected, that there is no significant relationship between number of broadband users and Nigeria's GDP.

DISCUSSION OF FINDINGS

The first objective of the study was to examine the relationship between mobile phone penetration (MPP) and economic growth in Nigeria. The result presented in Table 4.5 shows that mobile phone penetration has a negative relationship with GDP in the short run, as indicated by the coefficient of -0.226119. This implies that a one-unit increase in the first difference of mobile phone penetration is associated with an approximately 0.226-unit decrease in the second difference of GDP, holding the number of broadband users constant. However, the relationship is not statistically significant at the 5% level, given the probability value of 0.0908. Thus, the study fails to reject the null hypothesis that mobile phone penetration has no significant relationship with Nigeria's GDP at the 5% significance level. Nevertheless, the result becomes marginally significant at the 10% level.

The negative relationship between mobile phone penetration and economic growth is contrary to the findings of Alao-Owunna and Michael (2023), who reported that mobile telephone subscription had a positive and significant effect on economic growth in Nigeria in both the short and long run. It also differs from the findings of Wainaina (2025), who found that mobile phone subscribers per 100 people had a statistically significant positive impact on economic growth across 46 Sub-Saharan African countries. The divergence may

be attributed to differences in the period of study, measurement of mobile penetration, estimation techniques and prevailing economic conditions. In particular, the Nigerian economy may not automatically derive economic growth benefits from increased mobile penetration where complementary infrastructure such as reliable electricity, affordable internet services, digital skills and productive digital applications remain inadequate. The finding is, however, partly consistent with Alao-Owunna and Michael (2023) regarding the importance of contextual economic constraints, although their estimated coefficient for mobile telephone subscription was positive and significant.

The second objective was to examine the relationship between the number of broadband users (NBU) and economic growth in Nigeria. The result indicates a positive but statistically insignificant relationship, with a coefficient of 0.042778 and a probability value of 0.2290. This suggests that an increase in the number of broadband users is associated with an increase in GDP, but the evidence is insufficient to conclude that the relationship is statistically meaningful at the 5% level. Consequently, the study fails to reject the null hypothesis that the number of broadband users has no significant relationship with Nigeria's GDP.

The positive direction of the broadband coefficient is consistent with the findings of Abdullahi and Adamu (2023), who reported that ICT had a positive impact on economic growth in Nigeria. It is also consistent with Wainaina (2025), who found a significant positive association between fixed-broadband subscriptions and real GDP across Sub-Saharan African countries. However, the present finding differs from Wainaina's result in terms of statistical significance. The insignificant relationship observed in this study may suggest that an increase in broadband users alone does not necessarily translate into immediate economic growth. The economic benefits of broadband adoption may depend on the extent to which broadband connectivity is utilised for productive activities such as e-commerce, digital financial services, education, innovation, entrepreneurship and business process improvement. This interpretation is also supported by Ojeaburu and Ogbonna (2025), who observed that Nigerian entrepreneurs make inadequate use of ICT facilities partly because of insufficient technological knowledge and limited familiarity with emerging digital systems.

The findings also provide an interesting contrast with Olaoye and Olaofe-Obasesin (2019), who found that information technology had a significant positive impact on the performance of corporate organisations in Nigeria. While their study focused on organisational performance and used questionnaire data from IT specialists, the present study examines macroeconomic GDP dynamics using time-series data. The difference in the unit of analysis and methodology provides a plausible explanation for the different findings. Thus, although ICT may improve the efficiency and performance of individual organisations, such benefits may not immediately or automatically translate into measurable aggregate economic growth.

Similarly, the findings provide partial support for Alao-Owunna and Michael (2023). While their study established a significant positive effect of mobile telephone subscription on economic growth, the present study found a negative and statistically insignificant relationship between changes in mobile phone penetration and GDP. Their finding concerning internet usage, which was negative and insignificant, however, illustrates that ICT indicators can produce different economic outcomes depending on the specific technology being measured and the structural conditions of the economy.

The overall results suggest that ICT penetration in Nigeria has not yet generated sufficiently strong and statistically significant short-run effects on economic growth within the period covered by the study. Although broadband usage has the expected positive sign, its effect is statistically insignificant, while mobile phone penetration has an unexpected negative sign and is insignificant at the conventional 5% level. This suggests that access to ICT infrastructure alone may be insufficient to generate economic growth. Complementary factors, including reliable electricity supply, affordable internet access, digital literacy, quality infrastructure, human capital development and productive utilisation of digital technologies, may be necessary for ICT investment to produce stronger macroeconomic outcomes.

CONCLUSION

The study examined the relationship between information and communication technology (ICT) on economic

growth in Nigeria, with particular emphasis on mobile phone penetration (MPP) and the number of broadband users (NBU). The study was motivated by the increasing importance of ICT in modern economic activities and the need to determine whether the expansion of digital connectivity has translated into measurable economic growth in Nigeria. Based on the empirical evidence obtained from the unit root tests, ARDL Bounds Test and short-run regression analysis, the study concludes that the contribution of ICT penetration to Nigeria's economic growth has remained limited within the period covered by the study.

Based on findings from first objective,the study concludes that increased mobile phone penetration, by itself, has not produced a statistically significant improvement in Nigeria's economic growth during the period under investigation. This suggests that the economic benefits of increased mobile connectivity may depend on the availability of complementary infrastructure and the extent to which mobile technology is used for productive economic activities.

From second objective, the study also concludes that although increased broadband usage is associated with higher economic growth in terms of its direction, the available evidence does not establish a statistically significant relationship during the study period. This indicates that broadband expansion alone may not be sufficient to generate substantial economic growth unless it is accompanied by effective utilisation of broadband services for productive activities such as entrepreneurship, e-commerce, digital finance, education, innovation and business development.

Overall, the study concludes that ICT penetration in Nigeria has not yet translated into a statistically significant short-run or established long-run contribution to economic growth through mobile phone penetration and broadband usage alone. The findings do not imply that ICT is unimportant to economic development; rather, they suggest that the economic benefits of ICT depend on the quality, affordability, reliability and productive utilisation of digital infrastructure. Factors such as inadequate electricity supply, high cost of internet access, limited digital literacy, inadequate ICT skills, insufficient broadband infrastructure and low utilisation of ICT for productive activities may constrain the ability of ICT penetration to stimulate aggregate economic growth.

The findings therefore reinforce the argument that Nigeria's ICT development policy should move beyond merely increasing the number of mobile phone subscribers and broadband users. Greater emphasis should be placed on creating an enabling environment in which digital technologies can be effectively integrated into productive sectors of the economy. Strengthening digital infrastructure, improving electricity supply, reducing the cost of internet access, developing digital skills and promoting the productive application of ICT are essential for Nigeria to fully realise the potential contribution of ICT to sustainable economic growth.

RECOMMENDATIONS

Based on the findings and conclusions of the study, the following recommendations are made:

1. The cost of broadband and internet services should be reduced. Although the number of broadband users has a positive relationship with GDP, its effect is statistically insignificant. Policies that encourage affordable broadband services, greater competition among service providers and improved network coverage could increase the productive use of broadband and strengthen its contribution to economic activity.
2. Mobile phone penetration should be linked to productive economic activities. The negative and insignificant relationship between mobile phone penetration and GDP suggests that increased access to mobile phones does not automatically generate economic growth. Policies should encourage the use of mobile technologies for mobile banking, digital payments, agricultural information, online education, e-commerce, entrepreneurship and other activities capable of increasing productivity.
3. Broadband infrastructure should be integrated into productive sectors of the economy. The positive coefficient of broadband users, although statistically insignificant, indicates a potentially beneficial direction. Government should therefore promote broadband-enabled activities in manufacturing, agriculture, education, healthcare, banking, professional services and small and medium-sized enterprises to increase the economic returns from connectivity.

4. ICT policies should focus on productive utilisation rather than penetration alone. The findings indicate that simply increasing the number of mobile phone and broadband users may not automatically produce economic growth. Policymakers should therefore develop measurable programmes that assess how ICT is being used to increase productivity, create employment, promote innovation and improve business efficiency.

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Augmented Dickey-Fuller Unit root test

Null Hypothesis: GDP__N_B_ has a unit root				
Exogenous: Constant				
Lag Length: 0 (Automatic - based on SIC, maxlag=2)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			3.470268	1.0000
Test critical values:	1% level		-4.0579	
	5% level		-3.1199	
	10% level		-2.7011	
*MacKinnon (1996) one-sided p-values.				
Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 13				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(GDP__N_B_)				
Method: Least Squares				
Date: 09/01/26 Time: 11:20				
Sample (adjusted): 2010 2022				
Included observations: 13 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP__N_B_(-1)	0.10982	0.03165	3.47027	0.0052
C	1037.51	3449.31	0.30079	0.7692
R-squared	0.52263	Mean dependent var		12223.4
Adjusted R-squared	0.47923	S.D. dependent var		6135.12
S.E. of regression	4427.38	Akaike info criterion		19.7696
Sum squared resid	2.16E+08	Schwarz criterion		19.8566
Log likelihood	-126.5	Hannan-Quinn criter.		19.7518
F-statistic	12.0428	Durbin-Watson stat		1.50692
Prob(F-statistic)	0.00524			

Null Hypothesis: NBU__N_M_ has a unit root				
Exogenous: Constant, Linear Trend				
Lag Length: 1 (Automatic - based on SIC, maxlag=2)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-3.9665	0.0440
Test critical values:	1% level		-4.9923	
	5% level		-3.8753	
	10% level		-3.3883	
*MacKinnon (1996) one-sided p-values.				
Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 12				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(NBU__N_M_)				
Method: Least Squares				
Date: 09/01/26 Time: 11:19				
Sample (adjusted): 2011 2022				
Included observations: 12 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
NBU__N_M_(-1)	-1.835688	0.4628	-3.9665	0.0041
D(NBU__N_M_(-1))	0.604319	0.30297	1.99468	0.0812
C	2714.433	6477.34	0.41907	0.6862
#VALUE!	21608.17	5519.08	3.91518	0.0044
R-squared	0.698597	Mean dependent var		10620.3
Adjusted R-squared	0.585571	S.D. dependent var		12064.7
S.E. of regression	7766.792	Akaike info criterion		21.0143
Sum squared resid	4.83E+08	Schwarz criterion		21.1759
Log likelihood	-122.0858	Hannan-Quinn criter.		20.9545
F-statistic	6.180847	Durbin-Watson stat		2.39051
Prob(F-statistic)	0.017683			

Null Hypothesis: MPP__N_M_ has a unit root				
Exogenous: Constant				
Lag Length: 1 (Automatic - based on SIC, maxlag=2)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-0.4483	0.8704
Test critical values:	1% level		-4.122	
	5% level		-3.1449	
	10% level		-2.7138	
*MacKinnon (1996) one-sided p-values.				
Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 12				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(MPP__N_M_)				
Method: Least Squares				

Date: 09/01/26 Time: 11:18				
Sample (adjusted): 2011 2022				
Included observations: 12 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
MPP__N_M_(-1)	-0.041367	0.09228	-0.4483	0.6645
D(MPP__N_M_(-1))	-0.53382	0.31756	-1.681	0.1271
C	22675.48	14569.5	1.55637	0.154
R-squared	0.246583	Mean dependent var		11185.3
Adjusted R-squared	0.079156	S.D. dependent var		11934.2
S.E. of regression	11452.16	Akaike info criterion		21.7421
Sum squared resid	1.18E+09	Schwarz criterion		21.8633
Log likelihood	-127.4524	Hannan-Quinn criter.		21.6972
F-statistic	1.472784	Durbin-Watson stat		1.98036
Prob(F-statistic)	0.279679			

Null Hypothesis: D(MPP__N_M_) has a unit root				
Exogenous: Constant				
Lag Length: 0 (Automatic - based on SIC, maxlag=2)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-5.0162	0.0024
Test critical values:	1% level		-4.122	
	5% level		-3.1449	
	10% level		-2.7138	
*MacKinnon (1996) one-sided p-values.				
Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 12				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(MPP__N_M_,2)				
Method: Least Squares				
Date: 09/01/26 Time: 11:07				
Sample (adjusted): 2011 2022				
Included observations: 12 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MPP__N_M_(-1))	-1.525103	0.30403	-5.0162	0.0005
C	16477.7	4409.76	3.73665	0.0039
R-squared	0.715607	Mean dependent var		1106.49
Adjusted R-squared	0.687167	S.D. dependent var		19640.3
S.E. of regression	10985.11	Akaike info criterion		21.5975
Sum squared resid	1.21E+09	Schwarz criterion		21.6783
Log likelihood	-127.5849	Hannan-Quinn criter.		21.5676
F-statistic	25.16256	Durbin-Watson stat		2.01645
Prob(F-statistic)	0.000525			

Null Hypothesis: D(GDP__N_B_) has a unit root				
Exogenous: Constant				
Lag Length: 0 (Automatic - based on SIC, maxlag=2)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-0.5739	0.8424
Test critical values:	1% level		-4.122	
	5% level		-3.1449	
	10% level		-2.7138	
*MacKinnon (1996) one-sided p-values.				
Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 12				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(GDP__N_B_,2)				
Method: Least Squares				
Date: 09/01/26 Time: 11:20				
Sample (adjusted): 2011 2022				
Included observations: 12 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDP__N_B_(-1))	-0.204549	0.3564	-0.5739	0.5787
C	3450.638	4245.57	0.81276	0.4353
R-squared	0.031889	Mean dependent var		1190.14
Adjusted R-squared	-0.064922	S.D. dependent var		5320.51
S.E. of regression	5490.507	Akaike info criterion		20.2104
Sum squared resid	3.01E+08	Schwarz criterion		20.2913
Log likelihood	-119.2626	Hannan-Quinn criter.		20.1805
F-statistic	0.329399	Durbin-Watson stat		1.98035
Prob(F-statistic)	0.578693			

Null Hypothesis: D(GDP__N_B_,2) has a unit root				
Exogenous: Constant				
Lag Length: 0 (Automatic - based on SIC, maxlag=2)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-3.9279	0.0153
Test critical values:	1% level		-4.2001	
	5% level		-3.1754	
	10% level		-2.729	
*MacKinnon (1996) one-sided p-values.				
Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 11				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(GDP__N_B_,3)				
Method: Least Squares				
Date: 09/01/26 Time: 11:21				
Sample (adjusted): 2012 2022				
Included observations: 11 after adjustments				

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDP__N_B_(-1),2)	-1.237495	0.31505	-3.9279	0.0035
C	1852.419	1668.29	1.11037	0.2956
R-squared	0.631575	Mean dependent var		748.201
Adjusted R-squared	0.590639	S.D. dependent var		8524.29
S.E. of regression	5453.951	Akaike info criterion		20.209
Sum squared resid	2.68E+08	Schwarz criterion		20.2814
Log likelihood	-109.1497	Hannan-Quinn criter.		20.1634
F-statistic	15.42832	Durbin-Watson stat		2.01566
Prob(F-statistic)	0.003469			

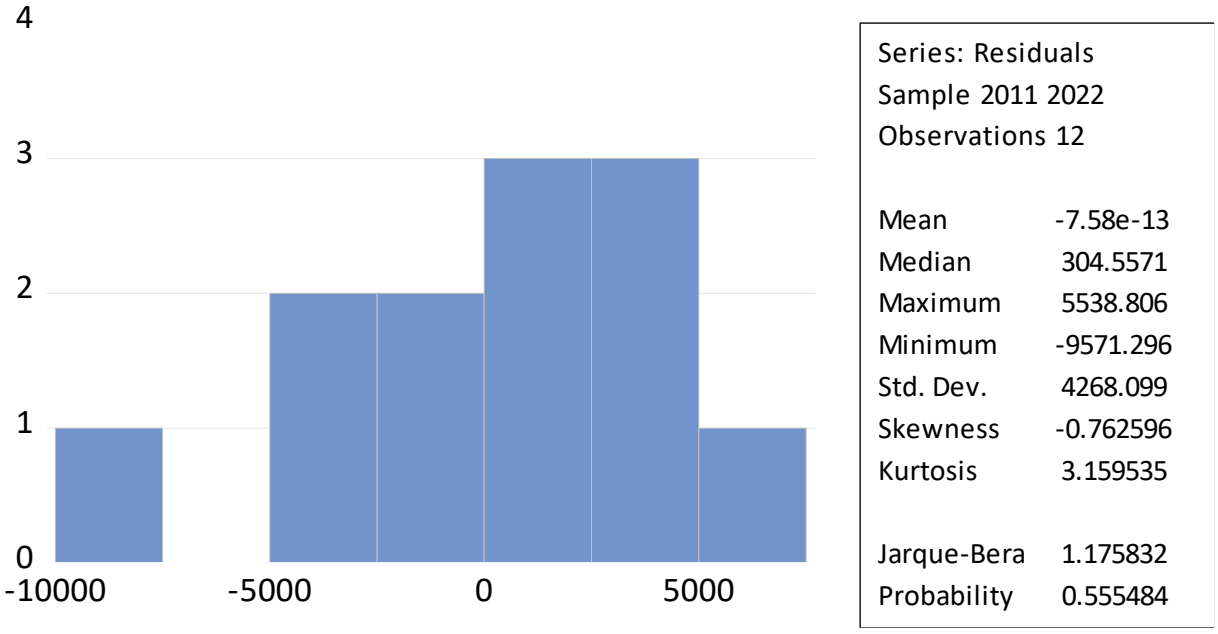
Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:				
Null hypothesis: No serial correlation at up to 2 lags				
F-statistic	4.14829	Prob. F(2,7)		0.0648
Obs*R-squared	6.50858	Prob. Chi-Square(2)		0.0386
Test Equation:				
Dependent Variable: RESID				
Method: Least Squares				
Date: 09/03/26 Time: 10:27				
Sample: 2011 2022				
Included observations: 12				
Presample missing value lagged residuals set to zero.				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DMPP__N_M_	0.13461	0.11479	1.17265	0.2793
NBU__N_M_	-0.019	0.02635	-0.72	0.4948
C	-753.64	2948.23	-0.2556	0.8056
RESID(-1)	-0.8329	0.37711	-2.2086	0.0629
RESID(-2)	-0.9589	0.35768	-2.6809	0.0315
R-squared	0.54238	Mean dependent var		-7.58E-13
Adjusted R-squared	0.28089	S.D. dependent var		4268.1
S.E. of regression	3619.38	Akaike info criterion		19.5203
Sum squared resid	9.2E+07	Schwarz criterion		19.7224
Log likelihood	-112.12	Hannan-Quinn criter.		19.4455
F-statistic	2.07415	Durbin-Watson stat		2.5766
Prob(F-statistic)	0.18789			

Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
Null hypothesis: Homoskedasticity			
F-statistic	1.829616	Prob. F(2,9)	0.2154
Obs*R-squared	3.468676	Prob. Chi-Square(2)	0.1765
Scaled explained SS	2.106768	Prob. Chi-Square(2)	0.3488
Test Equation:			

Dependent Variable: RESID^2				
Method: Least Squares				
Date: 09/03/26 Time: 10:30				
Sample: 2011 2022				
Included observations: 12				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-16565779	1.9E+07	-0.885	0.3992
DMPP__N_M_	428.3999	604.62	0.70854	0.4965
NBU__N_M_	290.8609	167.841	1.73296	0.1171
R-squared	0.289056	Mean dependent var		1.7E+07
Adjusted R-squared	0.131069	S.D. dependent var		2.6E+07
S.E. of regression	23891726	Akaike info criterion		37.0283
Sum squared resid	5.14E+15	Schwarz criterion		37.1495
Log likelihood	-219.1697	Hannan-Quinn criter.		36.9834
F-statistic	1.829616	Durbin-Watson stat		2.08333
Prob(F-statistic)	0.215406			



Ramsey RESET Test				
Equation: UNTITLED				
Specification: D2GDP__N_B_ DMPP__N_M_ NBU__N_M_ C				
Omitted Variables: Squares of fitted values				
	Value	df	Probability	
t-statistic	2.417047	8	0.0420	
F-statistic	5.842114	(1, 8)	0.0420	
Likelihood ratio	6.579290	1	0.0103	
F-test summary:				
	Sum of Sq.	df	Mean Squares	
Test SSR	84572518	1	84572518	
Restricted SSR	2.00E+08	9	22264818	
Unrestricted SSR	1.16E+08	8	14476355	

LR test summary:				
	Value			
Restricted LogL	-116.8123			
Unrestricted LogL	-113.5226			
Unrestricted Test Equation:				
Dependent Variable: D2GDP__N_B_				
Method: Least Squares				
Date: 09/03/26 Time: 10:34				
Sample: 2011 2022				
Included observations: 12				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DMPP__N_M_	0.128303	0.17542	0.7314	0.4854
NBU__N_M_	0.001985	0.03161	0.06279	0.9515
C	-3485.07	3231.82	-1.0784	0.3123
FITTED^2	0.000286	0.00012	2.41705	0.042
R-squared	0.62808	Mean dependent var		1190.14
Adjusted R-squared	0.48861	S.D. dependent var		5320.51
S.E. of regression	3804.781	Akaike info criterion		19.5871
Sum squared resid	1.16E+08	Schwarz criterion		19.7487
Log likelihood	-113.5226	Hannan-Quinn criter.		19.5273
F-statistic	4.503338	Durbin-Watson stat		2.48134
Prob(F-statistic)	0.039429			

