



Financial Inclusion and Economic Development in Nigeria 2000-2023

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Abstract. Financial inclusion refers to the process of ensuring access to appropriate, affordable, and timely financial products and services for all individuals and businesses, particularly those who are traditionally underserved or excluded from the formal financial system. The study investigated the effect of financial inclusion (banking penetration, availability of banking services, usages of financial services, digital financial technology) and economic development (Real gross domestic product per person, Gross fixed capital formation) in Nigeria. The study employed the *ex post facto* research design. Secondary data used in this study were sourced from the publication of the Central Bank of Nigeria Statistical Bulletin and National Bureau of statistic over a period of twenty-three (23) consecutive years ranging from 2000 to 2022 to estimate the regression models adopting Ordinary Least Square (OLS). Augmented Dickey Fuller (ADF) test of unit root was conducted to affirm the stationarity of the series and guard against spurious regression outcomes from the time series data. The study found that financial inclusion measures had significant and positive effect on Real Gross domestic product per person ($\text{Adj.}R^2 = 0.846$, $F = 24.84$, $P < 0.05$). The study found that financial inclusion measures had significant and positive effect on Gross fixed capital formation ($\text{Adj.}R^2 = 0.470$, $F = 14.00$, $P < 0.05$). The study concluded that financial inclusion measures affected the economic development in Nigeria. It is recommended that government should focus on the financial inclusion policies as a means of ameliorating poverty, through a participation of all economic agents in the financial system. There is a need for the government of Nigerian to prioritize the importance of financial inclusion.

Keywords: Human development Index, Economic Development, financial inclusion, Banking Penetration

1. Introduction

The integration of all sectors of the economy, with particular emphasis on the financial sector, is recognized as instrumental in fostering development and mitigating disparities within these countries (Atta, 2024). Economic development is taken to be the structural transformation of an economy by introducing more mechanized and updated technologies to increase labor productivity, employment, incomes, and standard of living of the population. In any economic setting, full employment, reduction in poverty, improving the welfare of the populace, price stability, increased productivity, favorable balance of trade (Yahaya & Yusuf, 2019).

Economic Development is commonly defined as the enhancement of national productivity within a nation (Etonet al., 2019). In developing nations, there has been a notable shift towards prioritizing sustainable development and long-term economic growth enhancing productivity that necessitates financial inclusion. The inadequacy of credit facilities has been identified as a primary impediment to rural productivity, largely because of the exclusion of these areas from the financial system. However, facilitating broad access to financial services, free from price or non-price barriers, can empower rural and impoverished populations to alleviate poverty, enhance productivity, and drive economic growth (Eton, 2019). Therefore, unless the financial system extends its reach to financially excluded rural communities, where a substantial portion of resources and contributions lies outside the financial system, the rate of productivity and economic growth may remain sluggish (Ele & Ogbonna 2023).

A significant portion of Nigeria's population lacks access to formal financial services, which are essential for the growth of the country's economy, particularly

the vibrant informal sector. The challenges arising from this lack of access (currently affecting 55% of Nigeria's population) result in Nigerians being deprived of access to deposits, credits, remittances, investments and many other financial services that help facilitate economic development for the country (Nduka, 2023). Economic Development may be attained by increasing production capacity and optimizing current capital resources. It fosters a fairer allocation of money among all individuals in society (Odumisor, 2024). Over ten-year intervals, minor changes in growth rates become substantial in longitudinal outcomes. Inclusive finance, as noted by Hannig and Jansen (2010), promotes long term economic growth and the generation of wealth. However, several factors can hinder long-term economic development, including growing populations, insufficient funding, outdated or inadequate infrastructure, poor resource utilization, excessive government intervention, and ineffective cultural and social structures.

Financial Inclusion has become a focal point of development policies worldwide, particularly in emerging economies, such as Nigeria (Atta, 2024). Financial Inclusion is defined as the provision of financial services at affordable rates to disadvantaged and low-income segments of the population, in contrast to financial exclusion, in which such services are inaccessible or unaffordable (Nwanne, 2015). Financial inclusion facilitates the establishment and expansion of small enterprises by obviating their challenges in securing financial support from conventional banking establishments. The utilization of novel ending methodologies and online platforms facilitate the provision of capital to entrepreneurs, hence enhancing financial inclusivity (Singh, 2020).

Financial inclusion refers to the process of ensuring access to appropriate, affordable, and timely financial products and services for all individuals and businesses, particularly those who are traditionally underserved or excluded from the formal financial system (Wakdok, 2020). The term financial inclusion refers to delivery of financial services at an affordable cost in a fair and transparent terms and conditions to vast sections of disadvantaged, weaker and low-income groups including household enterprise, small and medium enterprise and traders (Atul, 2012).

Financial inclusion has the potential to enhance the empowerment of demographic groups that are commonly disenfranchised within society, especially women and thus advance gender equality and women's economic empowerment. It empowers women by enhancing their control over financial resources, along

with improved access to education, better health outcomes, and increased autonomy in making household decisions. In valuing the import of financial inclusion as a mechanism of economic growth, Nigeria has instigated policies and programs to stimulate financial inclusion bearing in mind the peculiarities of the economy and local population features (Thomas, 2017).

According to world Bank (2015) postulated that financial inclusion entails the prospect of individuals and businesses to valuable and affordable financial products and facilities that meet their required transactions, payments, savings, credit, and insurance provided in an accountable and maintainable way. Agbelusi (2018) posited that World Bank estimated that two billion people are excluded from the formal financial services universally. Thus, financial inclusion seeks to unravel development prospects for the poor by providing access to basic financial services, especially microcredit facilities. While established economies such as UK, Sweden, France, among others have initiated definite legal and policy declarations towards inspiring activities (primarily by banks) that ensure continued growth and sustainable financial inclusion; the reverse is the case for developing economies like Nigeria.

Sub-Saharan Africa, unlike other regions, has the east developed economies. Only 43% of residents in this region have bank accounts, suggesting that a significant proportion of adults in the SSA region lack access to financial services and thus financially excluded (Makoni 2014; Demirgüç-Kunt et al. 2018). Given the significance of finance to economic growth, a low level of financial inclusion has been identified as one of the causes of the region's high poverty and inequality (Park and Mercado, 2015). Financial inclusion has continued to attract global attention in development finance and economic for over the years due to its capacity to drive the growth and sustainability of an economy.

Financial inclusion and economic development have become topical on the global policy agenda for sustainable development, economic literature on financial inclusion nexus especially in developing economies is still in its infancy. The ability to sustain financial inclusion to the populace mostly the rural residents in Nigeria is one of the key factors for economic development. That is why the Central Bank of Nigeria's (CBN) ensures that banks extend their products to remote areas. But a high proportion of the residents in these areas are still unbanked as a result of barriers such as low income per capita, lack of employment and low literacy levels, and long distance

to access points (Emeka & Udom, 2015). Also, there is an uneven distribution of revenue, which has broadened the disproportion of the income per capita between the rich and the poor. Thus, more than 50% of the nation's treasure is shared by fewer than 10% of the population (Awe & Olawumi, 2012; Babajide, Adegboye, & Omankhanlen, 2015).

Nigeria as a nation has numerous economic opportunities, but a sizeable portion of its population is still excluded from the established financial system. They are characterized by insufficient infrastructure, immobility, poverty, and lack of education. Despite efforts to increase financial inclusion, Nigeria hasn't experienced much of an improvement in financial inclusion since 2012. Between then and now, only 2.9% of Nigerians that were previously financially excluded have gained access to the financial services they need.

The lack of access and limited use of financial services by rural communities hinders the success of the federal government's financial inclusion policy in Nigeria. Awee and Olawumi (2012) reported that more than half the country's wealth is shared by only 10% of the population. This has posed a serious negative effect on the economy such as retarded economic growth, increased poverty levels, high information and transaction costs in the financial system, illiteracy, insecurity and unemployment.

One of the biggest challenges facing financial inclusion in Nigeria is that more than half of Nigerian adults don't have close proximity access to financial services such as ATMs, banks, or service kiosks. In fact, most Nigerians were reported as not knowing of any within a single bus ride of their home. This has been the case for Nigeria for years, as the rate of access to formal financial services remained constant in 2016 at 42%. Even mobile money has been slow to be integrated into Nigeria. Despite mobile money awareness seeing an increase from 12 percent in 2015 to 20 percent in 2016, a majority of Nigerian adults report still not knowing of a mobile money service point within close proximity. This makes limited access to service points a key hindrance to financial inclusion.

Nigerian adults prefer to use cash, and most of the population works in the informal sector. Naturally, this has made the use of financial services rather stagnant. One of the biggest reasons why cash is still the go-to payment method is because most non-users of formal financial services reported not being able to cover the service fees associated with transactions. Additionally, the regulatory changes that allow Nigerians to transfer

cash more freely definitely helped. Prior to 2017, regulations stated that Nigerians couldn't transfer amounts over \$10 without first submitting paperwork.

Financial institutions in Nigeria have neglected the financial demands of the economically active poor and rural residents despite their clear need for financial inclusion. Nigeria does not prioritize developing the economy and enabling financial transactions in rural regions. Inadequate budgeting resulted in continued economic suffering for the working poor and rural residents. The rural sector and active poor may enhance any country's capacity for growth and economic stimulation via their distinctive small businesses. Hence, the sector's contributions to economic growth would be compromised if this problem was not recognized (Nduka, 2023).

Nigerians who have access to financial services are reported as having a lack of basic resources and the financial knowledge necessary to carry out transactions: Only 16% of Nigerian adults report having the financial literacy it takes to carry out commonplace financial tasks such as registering for an account, and the lack of education around financial services has likely contributed to low financial inclusion. This is because, the economy is still characterized by the inadequate deployment of technology that lower the cost of financial services, inadequate creation of more channels to reduce distance of access points and lower the cost of transactions, lack of simple methods to enhance usage and reduce exclusion and development of a regulatory framework that supports financial inclusion. Thus, the goals of the paper were to; examine both the long run and short run impact of the independent variables (Banking Penetration, Availability of Banking services, Usages of financial services., Digital financed Technology) on the dependent variable (economic development) in Nigeria. The specific objective are to examined the relationship between financial inclusion and Real Gross Domestic Product in Nigeria (2) to ascertained relationship between financial inclusion and capital formation in Nigeria

2. Review of Extant Literature

2.1 Conceptual Review

Financial Inclusion

Financial inclusion is a diverse concept with multiple definitions based on a country's socioeconomic development level (Akileng, Lawino, and Nzibonera, 2018). Financial inclusion is the qualitative and quantitative expansion that makes it easy for investors to access financial products and services and is

measured by the number of people owning and using official financial instruments (Jungo, 2022). Financial inclusion is the process of ensuring that individuals and businesses, particularly those in underserved or disadvantaged communities, have access to useful and affordable financial products and services. These include transactions, payments, savings, credit, and insurance, provided in a responsible and sustainable way (Odumisor, 2024).

Chibba (2019) defines financial inclusion as a method to help disadvantaged individuals overcome market obstacles that hinder their access to financial services. As defined by Sarma and Pias (2018), financial inclusion refers to the accessibility of various financial services like savings accounts, insurance, loans, and payment and remittance processing. Financial inclusion is a compliment to other policies that are targeted at stimulating and catalyzing the achievement of overall macroeconomic policy targets and goals. The achievement of these goals is measured by changes in some macroeconomic parameters and indicators such as inflation rate, exchange rate, unemployment rate, interest rate, poverty rate and more importantly economic growth (Anderson, 2016). A wellfunctioning financial system drives economic growth through sustainable development and facilitates financial intermediation by offering savings, credit, payment, and risk-management products tailored to the diverse needs of individuals. Financially inclusive systems ensure broadbased access to financial services by providing customized products at affordable rates without stringent documentation requirements, particularly benefiting the poor and other vulnerable groups within the economy (Chude, 2022).

Banking Penetration

Banking penetration is the extent to which banking services are utilized by the population within a given area, usually a country or region. It is a key indicator of the financial inclusiveness and development of an economy (Krawetz, 2017). Effective banking penetration often requires supportive policies from the government, including regulatory frameworks that encourage the expansion of banking services and financial literacy programs that educate the public about banking benefits. Banking penetration is linked to broader economic development. Higher penetration usually means more people can save money securely, access credit for personal or business use, and invest in economic activities, all of which contribute to economic growth (Wakdok, 2018).

Availability of Banking Services

The concept of availability of banking services refers to the accessibility and reliability of financial services provided by banks to their customers. It involves a wide range of banking products and services such as savings accounts, loans, credit cards, investment options, and financial advisory services to meet diverse customer needs. Providing customers with the necessary knowledge and tools to understand and effectively use banking services (Arogundade, 2019). The availability of banking services is defined as the ease with which individuals and businesses can access various financial services provided by banks. This encompasses the physical presence of bank branches and ATMs, as well as digital banking platforms such as online and mobile banking. It enhanced digital accessibility that allows customers to perform transactions, check balances, and manage accounts from anywhere with an internet connection (Krawetz, 2017).

Usages of Financial Services

The concept of usage of financial services involved a broad range of activities and services provided by financial institutions, such as banks, credit unions, insurance companies, investment firms, and others. These services help individuals and businesses manage their finances, invest, save, and protect against risks. They are essential for the economic stability and growth of individuals and businesses. They provide tools for saving, investing, protecting assets, and facilitating transactions, all of which are crucial for financial health and long-term planning (Wakdok, 2018).

Digital Financed Technology

Digital finance technology, often referred to as fintech, encompasses on how financial services and products delivered through digital platforms and advanced technologies. Digital financed technology refers to the integration of digital technology with financial services and products. This combination leverages advancements in digital tools and platforms to enhance the delivery, efficiency, accessibility, and personalization of financial services (Chibba, 2019).

Economic Development

Economic development is a concept that concern itself with the study of how economies are transformed from stagnation to growth and from low income to high income status and overcome problems of absolute poverty. The process of development must involve

economic, cultural and political efforts, all geared towards the rapid transformation of the society so that there exists substantial economic progress. The ultimate goal of development is to understand developing economies and thereby help to improve the material well-being of the global population. Economic development has its attention focused on keeping the family and the entire society from the vicious circle of poverty and therefore, the government has a key role to play in making decisions and formulating policies centered on achieving this goal.

Economic development is generally referred to as the economic and social transformation which occur within the country. It is a process of change. It is the process of improving the quality of peoples' lives and capabilities by increasing their levels of living, self-esteem and freedom. It defines the process of increase in the level of income and the distribution of such income. Economic development refers to sustained and deliberate trouble to ameliorate the standard of living of a country's citizens by adding profitable exertion and creating openings for growth. Economic development can take colorful forms, including the development of structure, diversification of the frugality, enhancement of mortal capital, and creation of entrepreneurship and invention.

Gross Domestic Product Per Person

Real Gross Domestic Product (real GDP) is a measure of a country's economic output adjusted for price changes, such as inflation or deflation. It is the sum of the consumer spending, the investment made by industry, the excess of exports over imports, and the government spending. When an economy is going through a persistent inflation, the GDP increases, this does not actually reflect the true growth in an economy. This adjustment allows real GDP to reflect the true value of goods and services produced in a country, providing a more accurate representation of economic growth over time.

Real Gross Domestic Product (Real GDP) is a measure of the value of all goods and services produced by an economy over a specific period, adjusted for inflation. Unlike nominal GDP, which calculates economic output using current prices, Real GDP provides a more accurate reflection of an economy's size and how it is growing over time by accounting for changes in price levels. This adjustment allows for a more meaningful comparison of economic performance across different time periods. The nominal GDP is the market value of all final goods produced in a geographical region, usually a country, real GDP accounts for price changes

that may occur due to inflation. If prices of commodities change from one period to the next but actual output does not, nominal GDP would also change. To adjust for changes in price, real GDP is calculated using prices from a specific year (the base year) in comparison to the year of interest, this allows real GDP To accurately measure changes in output. Real GDP is calculated

Gross Fixed Capital Formation

Capital formation can be defined as the accumulation of savings by financial institutions which are channeled to productive investments. Through the financial market, we save, accumulate and invest. Capital formation involves the process of amassing or stocking of assets of value, the increase in wealth or the creation of further wealth (Adekunle, 2021).

The Business Professor (2022) conceptualized capital formation as the growth in the stock of actual capital in the economy over a particular financial year. According to Central Bank of Nigeria (2017), capital formation is the total change in the value of fixed assets in the economy in addition to fixed assets either for replacing or adding to the stocks, it refers to the increase in the fixed capital stocks of the capital formed.

Capital formation depends on the income of the people living in the country and their capacity to save and spend. It begins with the creation of savings and realized when those savings are invested. Capital formation can be differentiated from savings because accumulation deals with the increase in stock of needed real investments and not all savings are necessarily invested (Ugochukwu & Chinyere, 2013).

2.2 Theoretical Review

This study is anchored on Finance Growth Theory and Public Good Theory

Finance-Growth Theory

Finance growth theory was conceptualized by Schumpeter (1912). He hypothesized that financial arrangement plays an acute part in manipulating an extended period of economic growth rates. This assumption premised he development of financial systems cultivates an environment conducive to growth, operating through either a supply leading or 'demand-following' mechanism. This perspective underscores the critical importance of addressing financial exclusion that is often linked to persistent

income disparities and sluggish economic growth. In ensuring access to secure, convenient, and affordable financial services becomes imperative for catalyzing growth, ameliorating income inequality, alleviating poverty, promoting inclusive opportunities, integrating marginalized segments into the economy, and fortifying resilience against economic shocks (Serrao et al., 2012). Schumpeter's theory of economic development accentuated the pivotal role of innovation as a driver of growth, emphasizing the importance of new combinations of production methods, market development, and sectoral transformations, facilitated either through administrative mechanisms or banking channels in open economies (Stolbov, 2012).

Despite theoretical advancements, challenges persist, particularly in regions such as Nigeria, where financial inclusion is impeded by low levels of financial literacy, especially among rural populations. Limited access to information and telecommunications infrastructure exacerbates these challenges, hindering the effective utilization of financial services. Addressing these obstacles requires tailored awareness campaigns, linguistic considerations, and educational initiatives to empower individuals to effectively engage with financial services effectively (Migap et al., 2015). Thus, the key points from this theory as relates to Nigeria are: government through the CBN economic policies will help to encourage the formation of formal financial institutions like deposit money banks and microfinance banks which will in turn make financial products available abundantly at an affordable cost. Also, accessibility and usability of financial products effectively can lead to the growth and development of the economy.

Public Good Theory of Financial Inclusion

The public good theory of financial inclusion argues that the (i) delivery of formal financial services to the entire population and (ii) ensuring that there is unrestricted access to finance for everyone, should be treated as a public good for the benefit of all members of the population. As a public good, individuals cannot be excluded from using formal financial services and individuals cannot be excluded from gaining access to financial services. All individuals will enjoy basic financial services without paying for it. Access to financial services to one individual does not reduce its availability to others which means that all members of the population can be brought into the formal financial sector and everyone will be better off. Under this theory, all members of the population are beneficiaries of financial inclusion and nobody is left out.

Under the public good theory, any individual or small business that open a formal bank account can be offered free debit cards, they can also use the Automated Teller Machines (ATM) to perform transactions without being charged a transaction fee. Also, the suppliers of financial services such as financial institutions will bear the cost of offering financial services as a sunk-cost of doing banking business. The government may grant subsidy to financial institutions to help them cope with any resulting cost problems that may arise from offering free financial services. Also, a government can offer a lumpsum cash deposit into the bank account of all citizens and make owning a formal account the only requirement for individuals to access the free lump-sum cash deposit. This means that individuals who cannot pay their debts and who cannot meet their basic needs will stand a chance to be economically empowered when financial inclusion is viewed as a public good. This theory has two merits. Firstly, the public good theory suggest that everyone will benefit from financial inclusion regardless of status, income level or demographic differences.

2.3 Empirical Review

Odumusor (2024) ascertain the effect of financial inclusion on Nigeria's GDP growth. Determining the effect of loans on small businesses and the extent to which deposits and loans from commercial banks' rural branches influenced Nigeria's economic growth were two specific objectives. In this investigation, an ex post facto research design was implemented. This research investigated commercial bank loans extended to small-scale enterprises, deposits, and loans from commercial bank branches located in rural areas. Additionally, it examined the GDP of Nigeria from 2000 to 2020. The study employed a judgmental sampling technique. The data were analyzed in the research using Ordinary Least Square Regression, facilitated by Statistical Package EViews version 10.0. The study's findings indicate that the provision of small business financing by commercial banks has a substantial influence on the growth of the Nigerian GDP. The results of the study indicated that loans and deposits from rural subsidiaries of commercial banks have a substantial effect on Nigeria's GDP growth.

Ukoh (2023) examined financial inclusion on economic development in Nigeria. Specifically, this study was to examine the relationship between credit to private sector, number of bank branches per 100,000 adult, and economic development in Nigeria. The study was anchored on Financial Intermediation theory and Great Spurt theory Data obtained from Central Bank of Nigeria (CBN) and World Bank

Indicator and subjected them to Auto Regressive Conditional Heteroskedasticity (ARCH) technique to test the interaction between independent variables namely credit to private sector, number of bank branches per 100,000 adult, money supply and value of ATM/POS transactions with the dependent variable namely Human Development Index at 5% level of significance. The findings showed that financial inclusion in number of bank branches per 100,000 adults significantly explained the variation in Human Development Index in Nigeria but financial inclusion in credit to the Private Sector has no significant effect or variation in Human Development Index within the period under review in Nigeria.

Tran (2023) examined the linkage between financial inclusion, monetary policy and financial stability in 58 countries including 31 high financial development countries (HFDCs) and 27 low financial development countries (LFDCs) from 2004 to 2020 using the PVAR method. Results of impulse's response function suggest that in LFDCs, while financial inclusion and financial stability are positively correlated, they are negatively correlated with the inflation rate and the money supply growth rate. In HFDCs, financial inclusion is positively correlated with inflation rate and money supply growth rate, while financial stability is negatively correlated with financial inclusion, inflation rate and money supply growth rate. These findings imply that in LFDCs, financial inclusion increases financial stability and reduces inflation. In HFDCs, on the contrary, financial inclusion increases financial instability, leading to long-term inflation. The results of the variance decomposition confirm the above outcomes, specifically, this relationship is clearer in HFDCs. From the above findings, we propose some policy recommendations on financial inclusion and monetary policy for financial stability for each group of countries.

Model Specification

In trying to achieve the objective of this study, a regression model will be formulated to evaluate the effect of financial inclusion on economic development in Nigeria

$$Y = F(X)$$

$$ED = F(FI)$$

Where FI = Financial Inclusion

ED = Economic Development

Y = ED (dependent variable)

$$Y = y_1, y_2, y_3, y_4$$

y_1 = Real Gross Domestic Product (RGDP)

y_2 = Gross Capital Formation (GCF)

X = FI (independent variable)

$$X = x_1, x_2, x_3, x_4$$

x_1 = Banking Penetration (BAP)

x_2 = Availability of Banking Services (ABS)

Obi (2022) The impacts of financial inclusion on Nigeria's economic growth. Time series data from 2004 to 2021 were utilized. Time series data from 2004 to 2021 were utilized. The recently implemented policy on financial inclusion has a positive impact on economic development, according to the OLS study. The catalyst for growth is financial inclusion.

Emmanuel and M-Ember (2022) examined whether fiscal addition had any impact on sustainable profitable development in Nigeria. Using the Precise system of moment (GMM) and HDI marketable bank deposit, Number of marketable bank branches, affectation, loan to pastoral areas as delegates for fiscal addition, concluded that there's no significant relationship between fiscal addition and profitable development.

3. Methodology

The aimed is to investigate the relationship between financial inclusion and economic development in Nigeria. Regression analysis was employed for the study to forecast any relationship between the variables and also to estimate the influence of each explanatory variable on the dependent variable. The data of macro-economic variables was used sourcing from the published CBN Bulletin and National Bureau of statistic over a period of twenty-three (23) consecutive years ranging from 2000 to 2022 to estimate the regression models adopting Ordinary Least Square (OLS) method Therefore, explanatory variables involved were; Banking Penetration (BAP), Availability of Banking services (ABS), Usages of financial services (UFS), Digital financed Technology (DFT), and against dependent variable Gross Domestic Product Per capita (GDPP), Gross fixed Capital formation (GFCF),

x_3 = Usage of Financial Services (UFS)

x_4 = Digital Financed Technology(DFT)

Functional Relationships

ED = f(FI)

RGDP = f(BAP, ABS, UFS, DFT,)Equation 1

GFCF = f(BAP, ABS, UFS, DFT,)Equation 2

The model is specified as;

RGDP = $\beta_0 + \beta_{BAP} + \beta_2 ABS + \beta_3 UFS + \beta_4 DFT + \varepsilon$ Model 1

GFCF = $\beta_0 + \beta BAP + \beta_2 ABS + \beta_3 UFS + \beta_4 DFT + \varepsilon$ Model 2

4. Analysis and Interpretation

Estimation Techniques

Table 1: Unit Root Test Using Augmented Dickey Fuller (ADF) 2000-2022.

Variables	ADF-Statistic	Critical Values	Order of Integration
GDPP	-4.618231 (0.0045)	1% = -4.284580 5% = -3.562882 10% = -3.215267	Stationary at first difference
INFL	-3.922964 (0.0055)	1% = -3.679322 5% = -2.967767 10% = -2.622989	Stationary at second difference
HDI	-7.983590 (0.0000)	1% = -4.284580 5% = -3.562882 10% = -3.215267	Stationary at first difference
GFCF	-6.674093 (0.0000)	1% = -4.284580 5% = -3.562882 10% = -3.215267	Stationary at level
BAP	-3.804932 (0.0070)	1% = -3.661661 5% = -2.960411 10% = -2.619160	Stationary at level
ABS	-4.923062 (0.0000)	1% = -4.284580 5% = -3.562882 10% = -3.215267	Stationary first difference
UFS	-4.504734 (0.0047)	1% = -4.057910 5% = -3.119910 10% = -2.701103	Stationary at second difference
DFT	-3.748417 (0.0010)	1% = -2.728252 5% = -1.966270 10% = -1.605026	Stationary at first difference

Source: E-view Statistical Software Version 9.0; Analyzed, 2025.

The results of the Stationarity (unit root) test indicate that GDP, HDI, ABS, and DFT were stationary at first difference; INFL, and UFS were stationary at second difference; while GFCF and BAP were stationary at level. Therefore, it indicated that most of the variables were stationary at different levels of stationary. Hence, this implies that the data intend to be use for the analysis were in good shape and valid for the study, since they shows stationary at level and first difference.

Descriptive Statistics

Table 2: Descriptive Statistics of the Variables (Sample: 2000 – 2022)

Source: *E-view Statistical Software Version 9.0; Analyzed, 2025.*

Statistics	ABS	BAP	DFT	GDPP	GFCF	HDI	INFL	UFS
Mean	4635.174	214.4411	47058.62	48544.00	626031.2	0.437739	12.95971	359.2359
Median	5383.000	186.5073	39673.23	46012.52	80948.10	0.494000	12.00000	354.2516
Maximum	5809.000	518.3769	171496.0	71387.83	11673602	0.548000	23.80000	679.8245
Minimum	2193.000	120.3998	11717.56	23688.28	5417.170	0.000000	6.600000	101.3735
Std. Dev.	1200.199	104.9940	40252.42	16139.58	2412265.	0.175507	4.066658	199.0953
Skewness	0.866839	1.589279	1.900173	0.063892	4.453203	-2.087036	0.698911	0.385534
Kurtosis	2.245384	4.602417	5.956497	1.532506	20.90768	5.557418	3.339757	1.752194
Jarque-Bera	3.426121	12.14301	22.21753	2.079457	383.3419	22.96479	1.983121	2.061916
Probability	0.010313	0.002308	0.000015	0.0003551	0.000000	0.000010	0.000997	0.0006665
Sum	106609.0	4932.145	1082348.	1116512.	14398717	10.06800	298.0734	8262.426
Sum Sq. Dev.	31690507	242522.4	3.56E+10	5.73E+09	1.28E+14	0.677658	363.8296	872057.0
Observations	23	23	23	23	23	23	23	23

From the descriptive Statistics in table 2 above, it shows that Availability of Banking services (ABS), has the mean value of ₦4635.174 billion naira; maximum of ₦ 5809.000 billion naira; and minimum of ₦2193.000 billion naira skewed to the positive range of 0.86839 with Probability of 0.010313 < 0.05 significant level. The mean (average) value of Banking Penetration (BAP), has the mean value of ₦ 214.4411 billion naira; maximum of ₦518.3769 billion naira; and minimum of ₦120.3998 skew to the positive range of 1.589279 with Probability of 0.002308 < 0.05 significant level.

The mean (average) value of Digital financed Technology (DFT), has the mean value of ₦ 47058.62 billion naira; maximum of ₦ 171496.0 billion naira; and minimum of ₦ 11717.56 skew to the positive range of 1.900173 with Probability of 0.000015 < 0.05 significant level

Gross Domestic Product Per capita (GDPP), has the mean value of ₦ 48544.00 billion naira; maximum of ₦71387.83 billion naira; and minimum of ₦ 23688.28 billion naira to the positive range of 0.063892 with Probability of 0.0003551 < 0.05 significant level. Gross fixed Capital formation (GFCF) has average value of ₦ 626031.2 billion naira; maximum of ₦ 11673602 billion naira and minimum of 5417.170 billion naira skewed to the positive range of 4.453203 with Probability of 0.000000 < 0.05 significant level. Human Development Index (HDI) has average value of 0.437739; maximum of 0.548000 and minimum of 0.000000 which also skewed to the negative range of -2.087036 with Probability of 0.000010 < 0.05 significant level. Inflation Rate (INF) has average value of 12.95971; maximum of 23.80000 and minimum of 6.600000 which also skewed to the positive range of 0.698911 with Probability of 0.000997 < 0.05 significant level. And the last variable is Usages of financial services (UFS) has average value of ₦ 359.2359 thousand; maximum of ₦ 679.8245 thousand; and minimum of ₦ 101.3735 thousand skew to the positive range of 0.385534 with Probability of 0.0006665 < 0.05 significant level. Therefore, the above result shows that all of the variables concerned were satisfactory and accurately for the research analysis under the Probability which shows that they were statistically significant at 5% (percent) level of significant.

Figure 1 Stationary Graph at Level for the Combined Variables

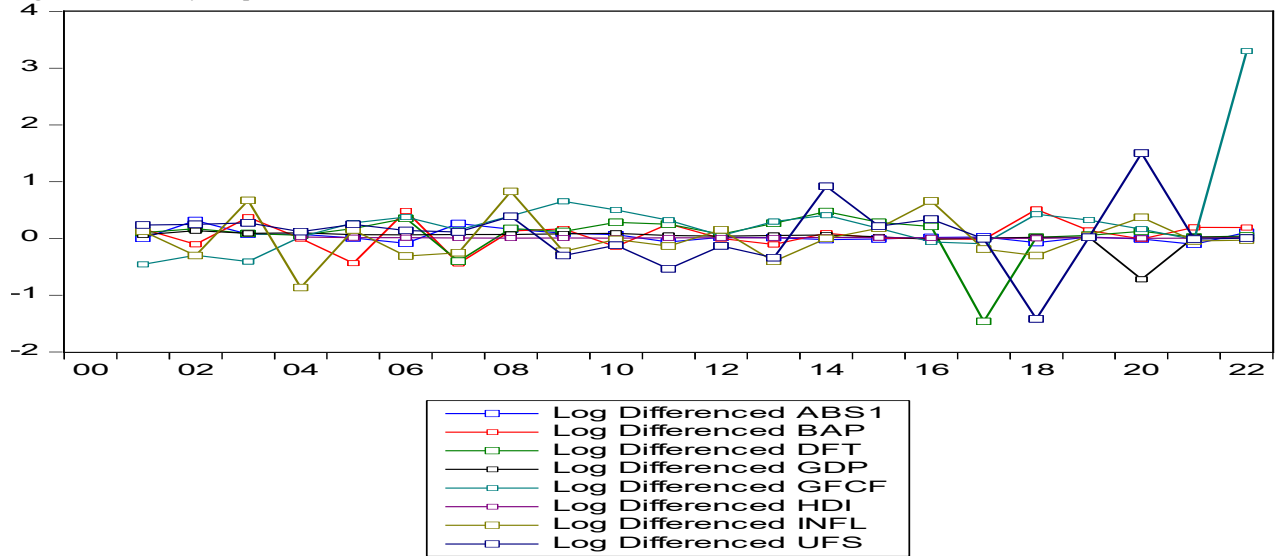
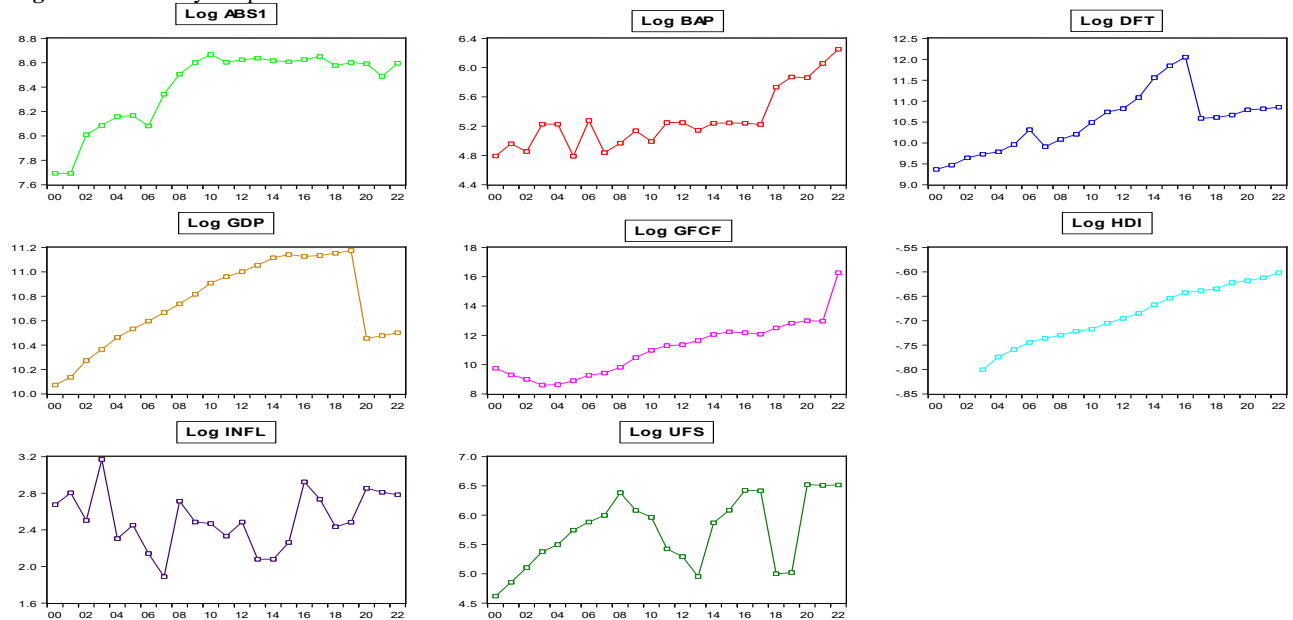


Figure 2 Stationary Graphs at the Level for Individual Variables



Research Hypotheses

Hypothesis One

H₀: Financial inclusion does not significantly affect Real Gross Domestic product per person in Nigeria.
Model Representatives (1)

Estimation Command:

LS GDP C BAP ABS1 UFS DFT

Estimation Equation:

$$GDP = C(1) + C(2)*BAP + C(3)*ABS1 + C(4)*UFS + C(5)*DFT$$

Substituted Coefficients:

$$GDP = 5529.93308622 - 21.977310768*BAP + 11.4581979258*ABS1 - 31.4247868109*UFS + 0.125483339664*DFT$$

Dependent Variable: GDPP

Method: Least Squares

Date: 07/28/25 Time: 20:24

Sample: 2000 2022

Included observations: 23

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5529.933	6217.537	0.889409	0.3855
BAP	21.97731	16.33451	-1.345453	0.1952
ABS	11.45820	1.625765	7.047881	0.0000
UFS	31.42479	9.029669	-3.480170	0.0027
DFT	0.125483	0.045031	2.786606	0.0122
R-squared	0.846666	Mean dependent var		48544.00
Adjusted R-squared	0.812592	S.D. dependent var		16139.58
S.E. of regression	6986.926	Akaike info criterion		20.73113
Sum squared resid	8.79E+08	Schwarz criterion		20.97798
Log likelihood	-233.4080	Hannan-Quinn criter.		20.79321
F-statistic	24.84774	Durbin-Watson stat		1.167241
Prob(F-statistic)	0.000000			

E-view Statistical Package, 9.0

Interpretation of the coefficients of determination

The above analysis shows that multiple regression analysis was carryout between our independent variable against the dependent variable. Result from the table shows that Banking Penetration (BAP), Availability of Banking services (ABS), Usages of financial services (UFS), Digital Financed Technology (DFT) have significant impact on the Gross Domestic Product Per capita (GDPP) at the 5% alpha level of significant. Thus, the co-efficient of determination R-squared is 0.846666 in the model of the regression analysis accounted for 84.6% changes in GDPP determined by all the predictors. The un-standardized coefficient of determinant further shows that (BAP/ β = 21.97731), (ABS/ β = 11.45820), (UFS/ β = 31.42479) and (DFT/ β = 0.125483) indicated that 1 unit increase in Banking Penetration will led to 21.9 billion naira increase in GDPP, 1 unit increases in Availability of Banking services will led to 11.4 billion naira increase in GDPP, 1 units increases in Usages of financial services will led to minus 31.4 billion naira increase in GDPP and 1 units increases in Digital Financed Technology will led to minus 12.5 units increase in GDPP at the (P-value < 0.05%) significant level. However, the model shows that it is a good fit, that the independent variables to a very large degree explain the changes in the dependent variable.

The Durbin Watson statistic is a number that tests for autocorrelation in the residuals from a statistical regression analysis. The Durbin-Watson statistic is always between 0 and 4. A value of 2 means that there is no autocorrelation in the sample. Values approaching 0 indicate positive autocorrelation and values toward 4 indicate negative autocorrelation. From the estimation, Durbin Watson statistics is (1.167241), implies that there is positive serial correlation or autocorrelation in the residual regression.

Also, the F-statistics value is (24.84774) with a probability or significant level of 0.000000 shows the overall analysis of the variance of the model which indicates that the explanatory variables are fundamental explaining the variation in the dependent variable.

In conclusion, since at the overall level, banking penetration, availability of banking services, usages of financial services, digital financed technology can jointly determine the changes in the gross domestic product per capita proxy economic growth, therefore null hypothesis (H_0) that says, “*Financial inclusion does not significantly affect Gross Domestic product per person in Nigeria*” is rejected while alternative hypothesis accepted.

5. Discussion of Findings

Study has empirically investigated the links between Financial Inclusion and economic development in Nigeria under four different specific objectives. The first objective found that Banking Penetration (BP), Availability of Banking Services (ABS), Usages of financial services (AFS), and Digital Financial Technolohy (DFT) have significant positive effect on the Gross domestic Product Per Person (GDPP) at the 5% alpha level of significant. This result was in conformity with the study of Nduka (2023), Enueshike and Okpebru (2020), Jisike and Ifeanyi (2021) while it negates the results of Okon, Umoh and Samuel (2023), Ademuyiwa (2019). This show that financial inclusion plays a major role in economic development in Nigeria.

Hypothesis Two

H_0 : Financial inclusion does not significantly improve Gross fixed Capital formation in Nigeria.

Model Representatives (2)

Estimation Command:

```
=====
LS GFCF C BAP ABS1 UFS DFT
Estimation Equation:
=====
```

$$GFCF = C(1) + C(2)*BAP + C(3)*ABS1 + C(4)*UFS + C(5)*DFT$$

Substituted Coefficients:

```
=====
GFCF = -1989361.43717 + 15100.4522314*BAP - 260.283124276*ABS1 + 1751.02666196*UFS - 0.963454649193*DFT
=====
```

Dependent Variable: GFCF

Method: Least Squares

Date: 07/28/25 Time: 20:27

Sample: 2000 2022

Included observations: 23

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1989361.	1726105.	-1.152515	0.0342
BAP	15100.45	4534.767	3.329929	0.0037
ABS	260.2831	451.3429	-0.576686	0.0413
UFS	1751.027	2506.806	0.698509	0.0058
DFT	0.963455	12.50142	-0.077068	0.0394
R-squared	0.470983	Mean dependent var		626031.2
Adjusted R-squared	0.353424	S.D. dependent var		2412265.
S.E. of regression	1939702.	Akaike info criterion		31.98363
Sum squared resid	6.77E+13	Schwarz criterion		32.23047
Log likelihood	-362.8117	Hannan-Quinn criter.		32.04571
F-statistic	14.006343	Durbin-Watson stat		1.627661
Prob(F-statistic)	0.000121			

E-view Statistical Package, 9.0

Interpretation of the coefficients of determination

The above analysis shows that multiple regression analysis was carryout between our independent variable against the dependent variable. Result from the table shows that Banking Penetration (BAP), Availability of Banking services (ABS), Usages of financial services (UFS), Digital Financed Technology (DFT) have significant impact on the Gross fixed Capital formation (GFCF) at the 5% alpha level of significant. Thus, the co-efficient of determination R-squared is 0.470983 in the model of the regression analysis accounted for 47.1% changes in GFCF determined by all the predictors. The un-standardized coefficient of determinant further shows that (BAP/ β = 15100.45), (ABS/ β = 260.2831), (UFS/ β = 1751.027) and (DFT/ β = 0.963455) indicated that 1 unit increase in Banking Penetration will led to 151 billion naira increase in GFCF, 1 unit increases in Availability of Banking services will led to 260 billion naira increase in GFCF, 1 units increases in Usages of financial services will led to 175 billion naira increase in GFCF and 1 units increases in Digital Financed Technology will led to minus 96.3 units increase in GFCF at the (P-value < 0.05%) significant level. However, the model shows that it is a good fit, that the independent variables to a very large degree explain the changes in the dependent variable.

From the estimation, Durbin Watson statistics is (1.627661), implies that there is positive serial correlation or autocorrelation in the residual regression.

Also, the F-statistics value is (14.006343) with a probability or significant level of 0.000121 shows the overall analysis of the variance of the model which indicates that the explanatory variables are fundamental explaining the variation in the dependent variable.

In conclusion, since at the overall level, banking penetration, availability of banking services, usages of financial services, digital financed technology can jointly determine the changes in the gross fixed capital formation proxy economic growth, therefore null hypothesis (H_0) that says, "*Financial inclusion does not significantly affect Gross fixed Capital formation in Nigeria*" is rejected while alternative hypothesis accepted.

6. Discussion of Findings

Study has empirically investigated the links between Financial Inclusion and economic development in Nigeria under four different specific objectives. The

second objective found that Banking Penetration (BP), Availability of Banking Services (ABS), Usages of financial services (AFS), and Digital Financial Technology (DFT) have significant positive effect on the Gross fixed capital formation (GFCF) at the 5% alpha level of significant. This result was in conformity with the study of Zouaoui, Al Qudah, Aoun, Arab and Eleuch (2018), Atta (2024), Ukoh (2023), Emmanuel and M-Ember (2022) while it negates the results of Kanu, Ozurumba and Anyanwu (2021). This show that financial inclusion plays a major role in economic development in Nigeria.

7. Recommendation and Conclusion

The study examined the effect of financial inclusion and economic development in Nigeria. To achieve this major objective robustly, four different financial inclusion proxies were selected and analysed namely; banking penetration, availability of banking services, usages of financial services, digital financial technology and economic development from 2020 to 2022 through descriptive analysis and panel regression. After reviewing the extant literature about the relationship between financial inclusion and economic development, deriving hypotheses from literature and theories, collecting data and analysing the data, the study concluded that there is a relationship between financial inclusion and economic development in Nigeria.

Based on the result obtained from studying the effect of financial inclusion and economic development using four different measurements of financial inclusion, the following recommendations are made:

The study has shown that expand financial access such as strengthen the establishment of bank accounts and bank branches can increase economic development in Nigeria. That is; they should focus on the financial inclusion policies as a means of ameliorating poverty, through a participation of all economic agents in the financial system. There is a need for the government of Nigerian to prioritize the importance of financial inclusion.

The study summit that more financial institutions should be established by the private sector through branch expansion by deposit money bank to rural areas and the setting up of microfinance banks situated in rural areas as well. Government should also encourage the establishment of community bank in rural areas to reach the unbanked.

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