THE ROLE OF FINANCIAL TECHNOLOGY (FINTECH) IN ADAPTING TO ECONOMIC VOLATILITY: A FOCUS ON NIGERIA

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ABSTRACT

The digital age has resulted in a transformative shift in the financial industry, enabling financial institutions to reach previously "unbanked" consumers in emerging economies while keeping current traditional bank customers (Saal et al., 2017. Economic volatility, characterized by unpredictable fluctuations in economic growth, inflation, and exchange rates, presents significant challenges for financial stability and development, particularly in emerging markets like Nigeria. Financial technology (FinTech) has emerged as a transformative tool, enabling individuals, businesses, and governments to navigate these uncertainties effectively. This article examines the role of FinTech in adapting to economic volatility in Nigeria, emphasizing its potential to enhance financial inclusion, streamline payment systems, and improve overall economic activities. The selected FinTech services—ATM, PoS, and mobile payments—showed a fluctuating but generally upward trend in production and popularity, peaking in 2020, likely due to the COVID-19 pandemic. Among these, ATMs were the most popular, although PoS and mobile payments have seen significant growth since 2017 and 2019, respectively. Data for this study was collected from the Central Bank of Nigeria, Macrotrends, and Statista, covering data from the past ten years, 2013 to 2023. Regression analysis was used in executing the data analysis. The study highlights how FinTech platforms have leveraged digital innovation to provide scalable solutions during economic disruptions, such as the COVID-19 pandemic, inflationary pressures, and exchange rate volatility.
Keywords: fintech innovation, economic resilience, Nigeria's adaptation
JEL: G21, E32, O33, L86

INTRODUCTION

The global economy has experienced significant volatility over the years, often triggered by financial crises, economic recessions, pandemics, or geopolitical conflicts. Nigeria, as one of Africa's largest economies, has not been immune to such disruptions. Economic instability, characterized by fluctuating oil prices, inflation, currency devaluation, and a heavy reliance on imports, has long been a challenge for the nation. In the face of these challenges, financial technology (FinTech) has emerged as a transformative force, reshaping the financial landscape and providing innovative solutions to mitigate the adverse effects of economic volatility.

Understanding FinTech and Economic Volatility
Financial Technology, commonly known as FinTech, refers to the use of technology to improve financial services delivery, including payments, lending, wealth management, and insurance. By leveraging digital platforms, mobile applications, and data analytics, FinTech companies bridge gaps in traditional banking and provide access to financial services in underserved regions.

Economic volatility in Nigeria is particularly pronounced due to the country's dependence on crude oil, which accounts for over 90% of export earnings and 60% of government revenue (World Bank, 2023). During the 2014–2016 oil price crash, Nigeria's GDP contracted by 1.6% in 2016, prompting significant shifts in economic policies. Similarly, the COVID-19 pandemic in 2020 led to a 1.8% GDP decline and a rise in unemployment to 33.3% in 2021 (National Bureau of Statistics, 2022). In such periods of instability, FinTech has proven to be a critical tool in maintaining financial inclusion, enabling resilience, and fostering economic recovery.

Growth of FinTech in Nigeria
Nigeria's FinTech sector is among the fastest growing in Nigeria, with over 200 FinTech startups currently operating in the country (Statista, 2024). This growth is fueled by a young and tech-savvy population—over 50% of Nigerians are under 25 years old—and the increasing penetration of mobile technology, with 89 million internet users as of 2023 (DataReportal, 2023).

The sector has attracted significant investment, with Nigerian FinTech companies raising over $1.3 billion in funding between 2021 and 2023 (CB Insights, 2024). Companies like Paystack, acquired by Stripe for $200 million in 2020, and Flutterwave, valued at over $3 billion, are clear examples of how FinTech is transforming Nigeria's financial ecosystem.

Key contributions of FinTech to mitigating economic volatility

i. Financial inclusion:
FinTech platforms like Opay, Paga, and PalmPay have expanded access to financial services, particularly in rural areas, where over 36% of adults remain unbanked (EFInA, 2023). These platforms provide affordable and accessible digital banking, reducing the impact of economic downturns on marginalized populations.

ii. Resilient payment systems:
During the cash shortages experienced in early 2023 due to the Central Bank of Nigeria's (CBN) currency redesign policy, digital payment platforms processed over $24 billion in electronic transactions in the first quarter alone (NIBSS, 2023). This demonstrated the robustness of FinTech solutions in ensuring continuity during economic disruptions.

iii. Job creation and economic diversification:
The FinTech industry has created over 500,000 direct and indirect jobs, contributing to economic diversification and reducing reliance on oil revenue (PwC Nigeria, 2024).

iv. Access to credit and investment opportunities:
Platforms like Carbon, Kuda, and Branch use data-driven algorithms to provide quick loans without collateral, enabling small businesses to stay afloat during volatile periods. In 2022 alone, these platforms disbursed over ₦500 billion in microloans (CBN, 2023).

As Nigeria navigates its path toward economic stability, the role of FinTech is expected to become even more significant. Proactive regulatory measures by the CBN, such as the Open Banking Framework launched in 2021, aim to foster collaboration between traditional banks and FinTechs, ensuring financial systems are better equipped to handle volatility.

FinTech has established itself as a crucial player in addressing economic volatility in Nigeria. By driving financial inclusion, improving access to credit, and fostering innovation, FinTech companies are helping Nigeria build a more resilient economy. The continued growth and strategic deployment of FinTech solutions will be instrumental in safeguarding the nation's financial stability in the years to come.

LITERATURE REVIEW
Conceptual analysis of FinTech

FinTech is being implemented in a variety of markets around the world, but not uniformly (Frost, 2020). As stated by Arner, et al., (2015), the derivation of the word "FinTech" can be drawn from the initial part of the 1990s with the financial services technology consortium, Citigroup that started an effort to make technology collaboration easier. Over a period, many other definitions were given by different people. Financial technology, or FINTECH, is an acronym for integrating banks knowledge with current administration knowledge methodologies and the computer. For the academic community to adopt a systematic scientific approach to the study issue, a tangible description of the acronym FinTech is particularly crucial. To improve efficiency while talking about the study item, it is necessary to have a solid actual and nominal definition. Researchers could describe FinTech to broaden our experience in the field as cross-disciplinary subject that combines Finance, Technology Management and Innovation Management (Leong, 2018).

According to Davis et al., (2017) the acceptability of FinTech by the public is required for its success. Furthermore, FinTech activities frequently result in innovative business concepts or even start-ups (Leong, 2018). After pointing out the old banking system's seeming lack of efficiency, Isukul and Tantua (2021) demonstrated the cost-effectiveness of financial technology as a custodian of tools and instruments for achieving financial inclusion for all in third-world countries. They believe that technology will provide the missing mechanism in traditional banking processes. FinTech services frequently offer increased convenience, lower financing rates or costs, and improved online experience and functionality (Buckley & Webster 2016).

FinTech efforts for long-term growth, such as increasing financial inclusion and boosting data security, decision-making in financing, facilitation of varied company concepts, and alternative investment, improving innovative ventures, expanding risk coverage, mobilizing capital market, increasing payment security, increasing diversification, lowering trading costs, creating new sales channels, and enhancing the productivity of fund transfers process, and promoting the regulatory oversight system (Leong et al., 2020). Due to digitalization, the monetary business has seen a constant progression in facility delivery for decades. Expanded connectivity and faster information processing are hallmarks of this growth, mutually at the user boundary and in back-office procedures. The emphasis of automation has eventually upgraded away from boosting traditional job performance and toward developing radically new company prospects and predictive modelling for organizations (Gomber et al., 2017).

Most FinTech companies specialize in a few services, providing them a competitive advantage. They will be able to streamline business operations as a result, allowing clients to meet their financial needs and wants mostly, if not entirely, through user-friendly internet channels. Their efforts, on the other hand, have mostly focused on the journey of clients in industrialized countries. What a FinTech company would be required to provide is widespread financial inclusion, which

will catalyze concrete economic progress in technology (Bukley & Webster 2016; Isukul & Tantua 2021). As stated by (Chen, 2016), the goal of technology is to make finance better serve real life rather than vice versa. The imminent of FinTech, on the other hand, is founded on concerted efforts to enhance framework conditions like as consumer trust, regulation, and scalability. The financial services (FS) industry is undergoing rapid development in tandem with technology advancements in the industry.

FinTech, a generic term for new wealth management that are aided by technology business plans, is causing a paradigm alteration in how monetary service organizations provide monetary and non-monetary assistances to networking partners (Schueffel, 2016; Zavolokina et al., 2016). Technology has a lengthy history of enhancing the capability of pecuniary organizations. Most financial establishments' main competencies are two: the capacity to grasp a wide range of consumers in a secure and competent way, and the capacity to understand, assess, and manage risks.

Arner et al. (2015) define FinTech as technology-enabled entities delivering financial services ordinarily believed to have been provided by banks. Rodgers (1995) broadly defines innovation as new and creative ways or solutions to known problems. Innovation is mostly inherent with the FinTechs. The outcome of the 2008/9 global financial crisis is that regulators and customers world over had very little trust in banks (Arner et al., 2015). Regulators would now go a step further to critically scrutinize the behaviour of banks to avoid reoccurrence of the global melt down and possibility of bank failures (Macey & O'Hara, 2016). This meant that people now became more trusting of FinTechs than banks thus becoming more open to consuming FinTech products.

Diffusion of Innovation model
In Figure 1 below, Rodger (1995) proposes the diffusion of innovation theory to explain the factors that drive the technology adoption.
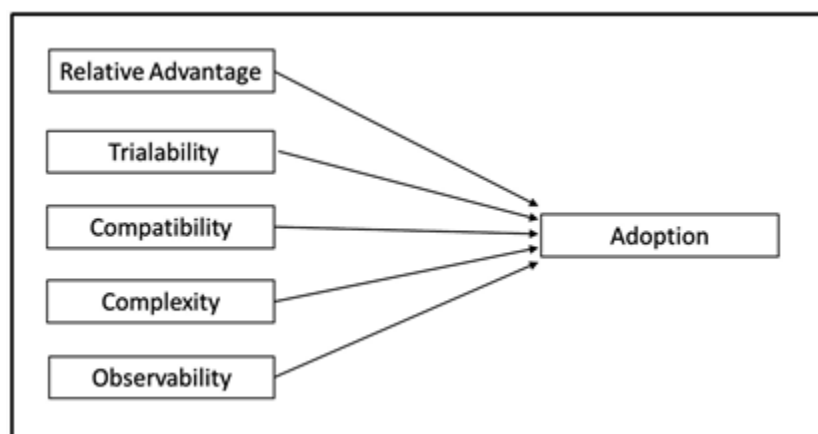

Figure 1: Diffusion of innovation theory (Rodger, 1995).

Relative advantage
This characteristic discusses the perceived value that the innovation will bring to users and is mostly compared to what is currently available. Believing that the said innovation has the ability to improve one's life is a starting point to arousing interest for the innovation to be adopted (Wani & Ali, 2015). The adoption of an innovation starts with the question "what's in it for me?". This

characteristic is perhaps the single most important element of the innovation adoption process as a user seeks to understand what benefit this innovation brings. How it changes their lives or makes them any better off than they previously where is going to be a strong motivation. Roger (1995) emphasizes that the innovation should demonstrate an improvement to one's way of doing things.

Trialability
Trialability involves the willingness of users to try out the innovation (Wani & Ali, 2015). The growth of FinTech innovations such as mobile money as an acceptable channel for payments would require one to register their mobile number for mobile money then proceed to try sending and receiving funds. Similarly, the same also applies for people operating bank accounts. The extent to which someone will be willing to use banking innovation requires that they first try to use the actual innovation.

Observability
Understanding the results of the performance of innovations after trying them can be a compelling reason for one to try out the innovation or not to (Yousafzai, 2012). Whether observing from personal experience or through the experiences of others, this characteristic is important towards creating one's affirmation if the innovation is useful to their well-being (Wani & Ali, 2015).

Complexity
The ease of use of any innovation makes it worth the while for people to adopt the innovation (Rodger, 1995). If the innovation is difficult to use, it is very likely that users will not be moved towards using the innovation. Sakala and Phiri (2019) reveal the findings of perceived ease of use of an innovation are critical to its adoption.

Compatibility
This refers to how an innovation fits into one's lifestyle or current conditions. Users would expect that the innovation should not cause them to have such a huge or significant change or shift from what they consider to be their norms.

Table 1: Innovative value propositions of FinTechs

Products	Sub-category	Core value proposition
Payment	Wallet	Customers will be able to sign up quickly, use stored value wallets on their phones, and benefit from important use cases in transportation, dining, and digital services.
	Processors	Streamlined routes for SMEs and corporations to accept electronic payments from clients.
	Remittance	Simple, quick cross-border transactions at an affordable price and time of traditional players — frequently utilizing Cryptocurrencies

	Merchants providers	Supplier of merchant terminals that enable merchants to accept offline transactions
Savings	Savings	Middle-class and members of generation clients can benefit from computerized, regulated, and high-return savings.
	Wealth management	Customers can invest in a variety of industries on digital sites at favorable rates (much higher than savings accounts at banks).
	Retail lending	Different credit scoring algorithms and data are used to provide immediate, unprotected, short-term loans to retail clients.
	MSME lending	MSMEs can get quick, unsecured funding from banks with little documents.
	Lending Infrastructure	Banks and other lending institutions can use this platform to streamline the approval processes and assess risk.
Services	Personal finance	Using machine learning, automate spending planning, and investment.
	Merchant solution	Inventory management, loyalty, and accounting are examples of value-added services for MSMEs and merchants.
	Financial institutions	Infrastructure and resources for financial services firms to use in providing digital benefits to customers, such as software and digitization.
Accounts	Savings	Smartphones are used to provide fully electronic banking services.
	Wealth management	Markets for insurance

Source: Topsy et. al., (2023)

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Impact of financial technology (FinTech) in adapting to economic volatility in Nigeria
Economic volatility, characterized by unpredictable fluctuations in economic indicators such as inflation, exchange rates, and GDP growth, poses significant challenges for individuals, businesses, and governments. In Nigeria, where economic instability is often a consequence of global shocks, fluctuating oil prices, and internal structural inefficiencies, Financial Technology (FinTech) has emerged as a transformative tool in addressing and mitigating the effects of such volatility. This paper examines the role of FinTech in helping Nigeria adapt to economic volatility by exploring key areas of impact in:

i.   Enhanced financial inclusion
FinTech platforms, such as mobile money services, digital wallets, and micro-lending platforms, have significantly broadened access to financial services in Nigeria. By reducing reliance on traditional banking systems, which often exclude rural and low-income populations, FinTech ensures that more Nigerians can:
- Save and manage money securely.
- Access micro-loans to support business activities during economic downturns.
- Perform transactions conveniently, even during periods of financial instability.

Key players like **OPay**, **Paga**, and **Flutterwave** have brought millions into the financial system, thereby empowering individuals and businesses to navigate periods of economic stress.
.
ii.   Diversification of revenue streams
Economic volatility often leads to reduced incomes and business closures. FinTech platforms enable individuals and businesses to diversify their income sources by:
- Facilitating e-commerce platforms where small businesses can sell products online.
- Providing ride-hailing and delivery services through platforms like OPay.
- Supporting freelance work opportunities via gig economy platforms.

By leveraging FinTech solutions, Nigerians can create alternative income streams, cushioning the effects of economic uncertainty.

iii. Improved access to credit
During periods of economic volatility, traditional banks often tighten lending conditions, making credit inaccessible to many. FinTech companies fill this gap by:
- Offering micro-loans with flexible repayment terms through digital platforms.
- Using alternative credit-scoring models, such as mobile usage data, to assess borrowers' creditworthiness.
- Enabling small businesses to secure working capital to sustain operations.

Examples include **Carbon**, **Branch**, and **FairMoney**, which provide quick and easy access to loans with minimal documentation.

iv.   Efficient cross-border payments
Exchange rate volatility can disrupt cross-border trade and remittances, which are crucial for Nigeria's economy. FinTech innovations like blockchain-based payment solutions and cryptocurrency platforms enable:
- Faster and cheaper cross-border transactions.
- Reduced dependency on traditional banking systems prone to delays and high fees.
- Access to stablecoins, mitigating the effects of the Naira's devaluation.

Companies like **Chipper Cash** and **Flutterwave** are at the forefront of facilitating seamless international payments for Nigerians.

v. Promotion of digital savings and investments

Economic uncertainty often forces households and businesses to prioritize liquidity. FinTech platforms encourage financial discipline and wealth creation by offering:

- Digital savings solutions with attractive interest rates (e.g., **PiggyVest**, **Cowrywise**).
- Investment platforms that provide access to diversified portfolios, including stocks, bonds, and mutual funds.
- Tools for automated savings, helping users build a financial cushion for future shocks.

vi. Strengthened economic policy implementation

FinTech supports the government in adapting to economic volatility by:

- Enhancing tax collection efficiency through digital payment systems.
- Facilitating the distribution of social welfare programs during crises, ensuring transparency and accountability.
- Providing real-time data analytics to inform evidence-based policymaking.

The need for FinTech in Nigeria

In the future years, the need for FinTech will increase in Nigeria. FinTech will inevitably migrate towards the world's least technologically developed countries. Nigeria is a major developing nation with a populace of over 200 million people, the most of whom live in cities, and FinTech would be in high demand to help with commerce. With a new culture of entrepreneurship, the urge to use technology to address problems increased in Nigeria, allowing firms to revolutionize how millions of Nigerians live in the digital age (Idris, 2021). This is especially true in the financial services sector, as FinTech companies are increasingly infiltrating the influence of traditional financial firms. 1. In Nigeria, having a bank account is far from a priority for adults, with barely 45 percent of the adult population having one. This can be seen below.

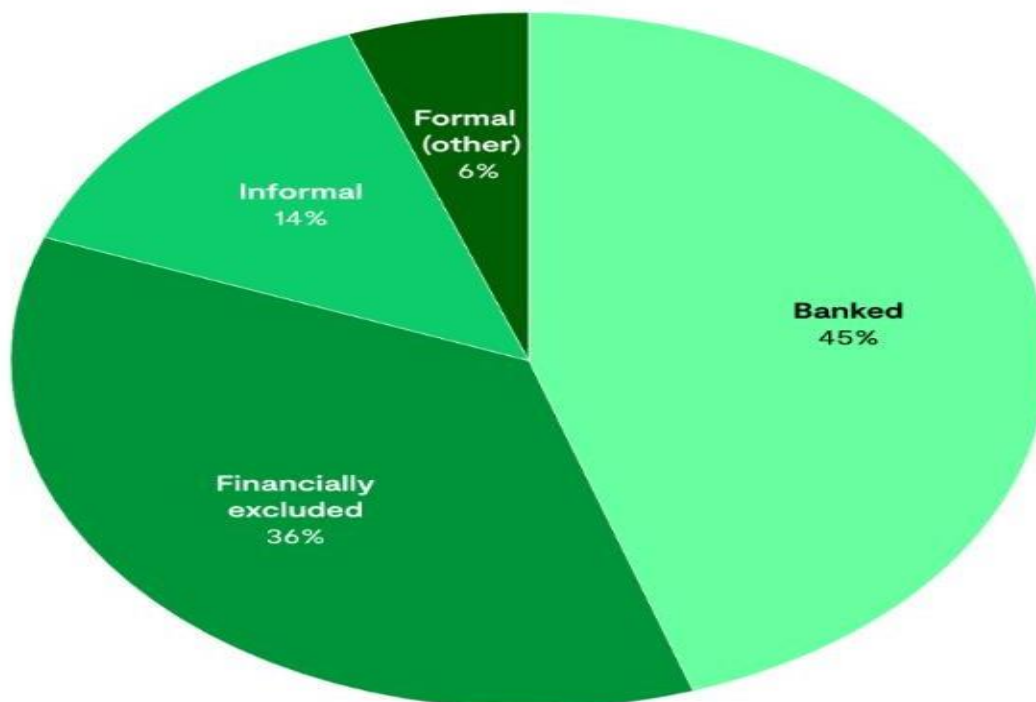The majority of Nigeria's adult population lacks bank accounts.

Chart: Rest of World · Source: EFInA 2020 Survey

Figure 2. Statistical behaviour of banked and unbanked individuals in Nigeria Source: EFInA, (2023)

Only 47.6 million Nigerians, or 45% of the adult populace, have a bank account. This information came from the Enhancing Financial Innovation & Access report (EFInA 2023). As a result, a large proportion of the country's adults are unbanked or have limited access to formal financial services. When you look at individual services like credit, which is only available to 3% of the adult population, or insurance, which is only available to 2% of the adult population, the numbers become even more stark. According to the EFInA report, affordability and perception issues continue to deter individuals from using banks. However, it also points to a lack of convenience, claiming that many Nigerian adults are turned off from formal financial services because of the physical distance between their banks and their homes, as well as the length of time required for most bank activities. This is clearly interesting times for FinTech to investigate and create enticing opportunities for industry entrepreneurs as:

1. Electronic payments, often known as E-payments, have grown dramatically since 2014, increasing steadily over a nine-year period and reaching $256 billion in 2023 (EFInA, 2023).

2. Nigeria's digital payment history as recorded by the Nigeria Inter-Bank Settlement Scheme (NIBSS) (NIBSS 2023). Since 2014, digital payments have increased by more than fivefold, reaching 105 trillion naira ($256 billion) in 2023. FinTech behemoths like Flutterwave and Paystack, which built simple payment solutions for individuals and businesses, have taken notice of this intriguing development. Stripe, a FinTech business based in the United States, paid more than $200 million for Paystack in October 2023, while Tiger Global valued

Flutterwave at more than $1 billion in March. Others are getting engaged as well: FinTechs rely on infrastructure built by the Nigerian Inter-Bank Settlement Scheme (NIBSS) and Interswitch, such as real-time transfers. In Nigeria, the number of FinTech unicorns is rapidly increasing. It was unusual ten years ago to see a Nigerian business raise $10 million. FinTech unicorns are now becoming as valuable as the country's banks. In terms of market valuation, Nigeria's unicorns are on par with banking conglomerates, as shown in the graph below. Interswitch and now boasts the most unicorns of any African country, with all three achieving unicorn status in the recent few years. Flutterwave are now worth more than $1 billion each, while OPay is over $2 billion. Nigeria.

3. In Nigeria, FinTech dominates startup funding; The three Nigeria Unicorns are all FinTechs, which is interesting. Investors have poured money into dozens of FinTechs, showing a preference for this sector over others. In just one week in 2019, $350 million was distributed to three FinTechs (Idris 2021). This bodes well for others, including cross-border payments companies, digital savings companies, and banking agency startups. Investors believe Nigerian entrepreneurs are safe risks that will pay off. This can be seen in the pictorial view below.
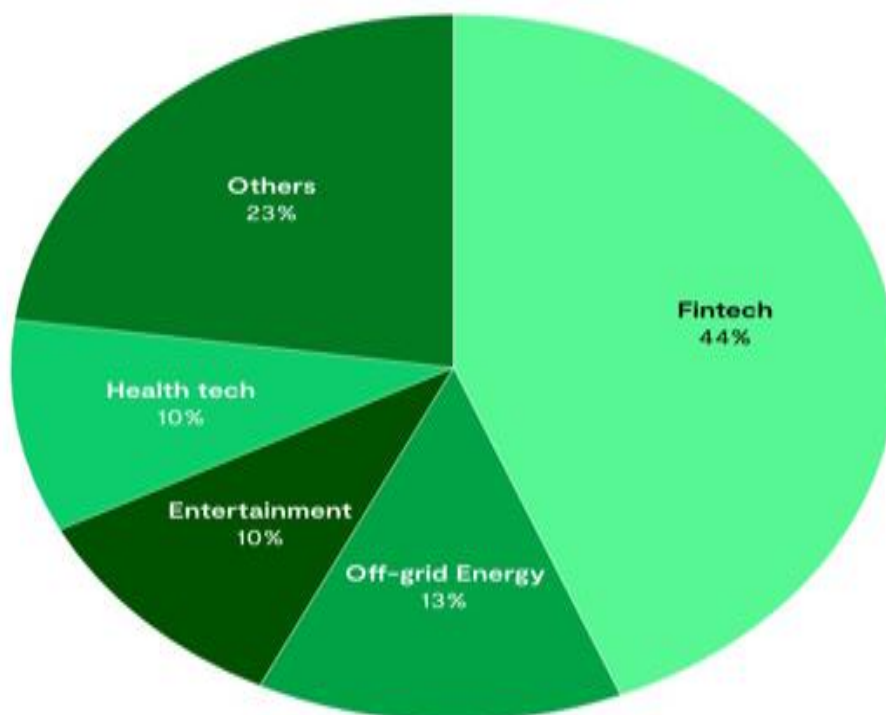

Figure 3. FinTech dominate startup funding in Nigeria (EFInA, 2023)

4. Nigerians have a $3.6 billion interest in savings and investing items (EFInA, 2023); Nigeria's economy, like that of the rest of the Third World, has been steadily declining over the previous decade. This is owing to the depreciation of national currencies like as the naira against the dollar. Nigerians have been looking for new ways to save their money, including FinTech-enabled savings and investments, as traditional banks have been offering insufficient interest on saves in relation to severe inflation and the depreciating naira. Others

are using FinTech platforms to invest in dollar-denominated assets such as dollar savings products and U.S. shares. From 223 billion naira ($541.7 million) in 2016, to 1.4 trillion naira ($3.4 billion) in 2023, the amount has increased dramatically.

Economic volatility in Nigeria

Economic volatility refers to fluctuations in key economic indicators such as GDP growth, inflation, exchange rates, and unemployment. In Nigeria, economic volatility is influenced by factors including oil price fluctuations, fiscal policies, exchange rate misalignments, and external shocks. Below is a summary supported by numerical and statistical data to illustrate Nigeria's economic volatility:

GDP growth rate fluctuations
- Nigeria's GDP growth rate has been erratic, largely due to dependency on crude oil revenues.
- 2014-2023 GDP growth:
    - 2014: 6.3% (pre-oil price shock)
    - 2016: -1.6% (economic recession following the oil price crash)
    - 2019: 2.3% (modest recovery)
    - 2020: -1.8% (COVID-19 pandemic)
    - 2022: 3.3% (boost from oil price recovery)
    - 2023: Estimated at 2.9% (ongoing global uncertainties).

Inflation rate trends
- Nigeria's inflation rate has been persistently high, reflecting food price instability, currency depreciation, and fiscal inefficiencies.
- Historical Data:
    - 2015: 9%
    - 2017: 18.7% (peak following exchange rate crisis)
    - 2021: 16.9%
    - 2023: 24.8% (impact of fuel subsidy removal and naira depreciation).

Exchange rate volatility
- The Nigerian Naira has experienced severe depreciation over the years due to insufficient foreign reserves and a high import dependency.
- Exchange rate (USD/NGN):
    - 2015: ₦197/$
    - 2017: ₦305/$ (introduction of multiple exchange rates)
    - 2020: ₦379/$
    - 2023: ₦750/$ (post-unification reforms).

Unemployment and underemployment
- High unemployment rates reflect structural issues in the economy, particularly among youth.
- Rates:
    - 2015: 10.4%
    - 2020: 33.3% (COVID-19 impact)
    - 2023: ~37% (youth unemployment remains critical).

Emeke & Ogege (2024). The role of financial technology (FINTECH) in adapting to…

Oil price dependency
- Nigeria's economy is highly reliant on oil exports, making it vulnerable to global oil price changes.
- Oil prices and revenue:
  - 2014: $100/barrel
  - 2016: $40/barrel (causing recession)
  - 2022: $90/barrel (boosted government revenue).
- Oil contributes over 90% of foreign exchange earnings and over 50% of government revenue.

METHODOLOGY

he research methodology expresses the study's approach to data collection in order to respond to the research questions (Saunders, 2012). A quantitative research design was chosen for this study. Aliaga and Gunderson (2002) define quantitative research as explaining phenomena by collecting numerical data that are analyzed using mathematical methods. Muijs (2004) suggests that quantitative research is especially suited when testing hypotheses where the researcher wants to not only establish if there is a relationship between variables.

Assessment of the impact of FinTech on the economic development of Nigeria
To practically evaluate the the influence of FinTech on the economic development of Nigeria, three FinTech services were used. These were:

1. Mobile payment
2. Point of sales (PoS)
3. Automated Teller Machine (ATM).

Although, many FinTech services and product are used by Nigerians in their daily activities, the popularly used and accessible to most people in the country were chosen for this research. The figure below shows the constant growth in the services and products of these selected FinTechs over the past ten years.
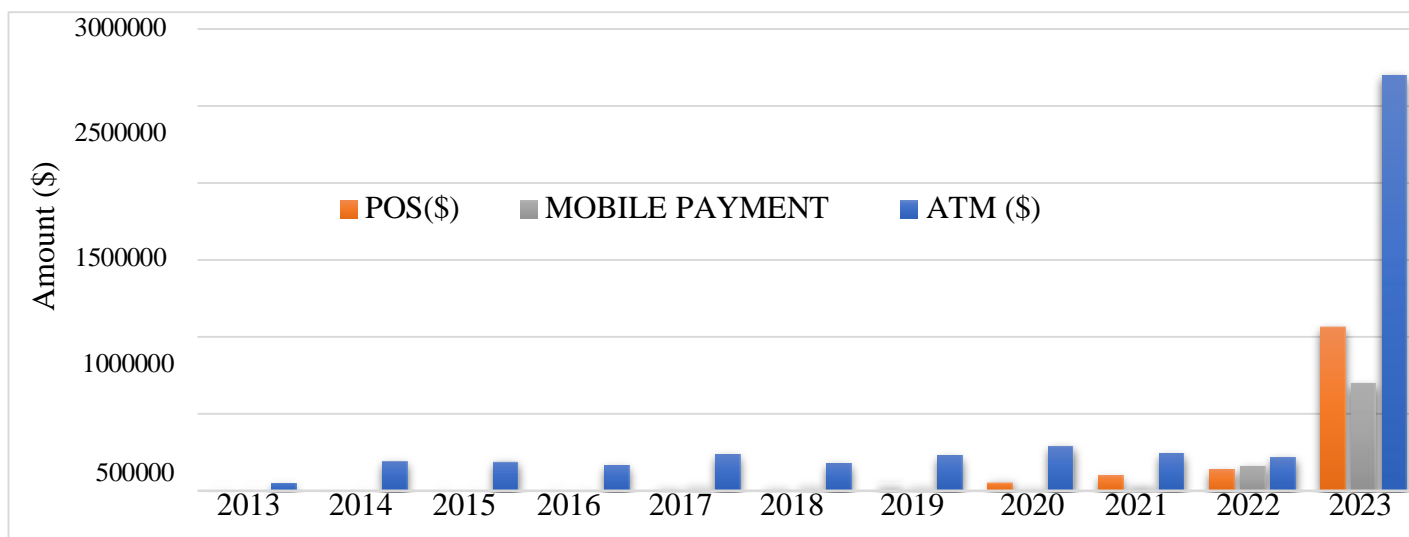

Figure 4: Pictorial view of the selected FinTech income generation over the decade (Author, 2024)

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From the above diagram, there is a constant undulating rise and fall in the production and services of all the selected FinTech from 2013 to 2023 where in 2023, they all yielded the highest income and popularity. The sharp increase from 2020 is expected to be because of the COVID-19. Thus, these services and products have gradually been accepted in the Nigerian community with ATM being the most popularly used over the decade. However, PoS and Mobile payment are also gradually gaining grounds and acceptance with PoS starting from 2013 and mobile payment in 2023.

Also, three macroeconomic indexes would be used in this research, and they are:
1. GDP per capita: is a ration of a country's economic production per person.
2. Consumer Price Index (CPI): The CPI looks at the weighted mean of charges for a carrier of services and goods.
3. The unemployment rate is the unemployment rate as a proportion of the labor force.

Therefore, these set of parameters defined was to help investigate the impact of the stated FinTech on the individual selected macroeconomic indexes to aid in analyzing the overall impact of FinTech on the economy of Nigeria.

DATA ANALYSIS, RESULTS AND DISCUSSIONS
Table 2: Regression analysis of GDP per capita with mobile payment, PoS and ATM

Regression Statistics	
Multiple R	0.730612142
R Square	0.533794102
Adjusted R Square	0.300691154
Standard Error	334.5158138
Observations	10

Source: Author (2024)

The correlation coefficient (0.73) in the preceding table indicates a moderately high linear association between GDPs per capita and mobile payment, point-of-sale, and ATM. With an adjusted R square of 0.3, the model shows a moderately poor fit of the data, implying that the proportion of variance in the dependent and independent variables is slightly below average, as about 30% of the points fall on the regression line, and thus 30% of the variation in GDP per capita is explained by mobile payment, PoS, and ATM transactions and services, as well as fitting the model.

Because the predicted standard error (334.52) is wide, employing this regression model for future predictions would provide unfavorable results because the confidence obtained would be prone to many errors.

Furthermore, the significance F of 0.18 indicates the likelihood that the null hypothesis in the regression model should be rejected because it yielded a result greater than 10%. As a result, there's a good chance our regression model is incorrect and should be scrapped.

If no transactions on mobile payments are made, the intercept of 883.84 shows that GDP per capita will be 883.84. Also, in terms of PoS and ATM, if no PoS or ATM transactions and

services are conducted, GDP per capita would be 656.47 and 50074.01, respectively.

The coefficients for mobile payment and ATM transactions and services are both positive, indicating that for every unit growth in mobile payment and ATM transactions and services, the GDP per capita will increase by the coefficient value, which is 0.009 and 0.003 correspondingly. The PoS, on the other hand, yielded a negative coefficient of 0.013, implying that for every unit decrease in the PoS, the GDP per capita would decline by the coefficient's value. Also, while the P-values for PoS and ATM indicate that the regression model is credible, the p-value for mobile payment suggests otherwise.

Therefore, it can be concluded that, due to the large standard error this model is not appropriate and needs to be discarded which implies FinTech has little or no significant effect on the GDP per capita of Nigeria and hence this model would not be considered for the predictive analysis.

With reference to CPI and ATM in the above diagram, there is a relatively losing positive relationship between CPI and ATM, because as CPI increases, the ATM services and transactions also increase. The relationship appears to be moderately above average, and this can be seen in the calculated coefficient of correlation, which is 0.66, which shows that the relation between the CPI and ATM is relatively strong.

Therefore, it can be concluded that from the figures above that CPI has a relatively high positive relationship with the selected FinTech, which means that an increase in CPI means a relevant increase in FinTech transactions, services and income with CPI and mobile payment having the strongest relationship followed by CPI and Pos and CPI and ATM transactions and services

Table 3: Regression analysis of CPI with mobile payment, PoS and ATM

Regression Statistics	
Multiple R	0.932866
R Square	0.870239
Adjusted R Square	0.805358
Standard Error	34.13877
Observations	10

Source: Author (2024)

The correlation value (0.93) in the table above indicates a very strong linear association between CPI and mobile payment, point- of-sale, and ATM. With an adjusted R square of 0.81, the model shows a strong fit of the data, implying that the proportion of variance in the dependent and independent variables is strong, as about 81 percent of the points fall on the regression line, and thus, 81% of the disparity in CPI is elucidated by mobile payment, PoS, and ATM transactions and services, as well as fitting the model.

Because the predicted standard error is low (34.14), employing this regression model to make future predictions would be a smart idea because the confidence interval it generates would be less prone to errors.

Furthermore, the F-Statistics of 0.004 indicates the likelihood that the null hypothesis in the

regression model should be accepted because the outcome was less than 10%. As a result, our regression model has a reasonable chance of being accurate.

If no mobile payment transactions are completed, the intercept of 883.84 shows that the CPI will be 883.84. Also, in the case of PoS and ATM, the CPI would be 656.47 and 50074.01, respectively, if no PoS or ATM transactions or services were performed.

The PoS coefficient is positive, indicating that for every unit increase in PoS transactions and services, the CPI will rise by 0.002. However, mobile payment and ATM transactions and services both have negative coefficients of 0.0006 and 0.0005, respectively, implying that the CPI would fall by the value of the coefficients for every unit decline in mobile payment and ATM transactions and services. Furthermore, while the P-values for PoS and ATM show that the regression model is credible, the p- value for mobile payment suggests otherwise.

As a result, because the standard error of this model is reasonably low, it is appropriate and must be accepted, implying that FinTech has a considerable impact on Nigeria's CPI, and thus this model should be considered for predictive analysis.

Taking the relationship between unemployment rate and ATM, it is obvious that there is a strong confident rapport between unemployment rate and the utilization of the ATM, because as unemployment rate increases, the ATM services and transactions also increase considerably. Thus, the relationship appears to be very strong as the calculated coefficient of correlation which is 0.74 also proves this. This shows that the correlation between the unemployment rate and mobile payment transactions and services is relatively strong.

Hence, comparing the fig. 19 to fig. 21, it can be concluded that the unemployment rate has a relatively high positive relationship with the selected FinTech, which means that an growth in unemployment rate means a significant upsurge in FinTech transactions, services and income with approximately unemployment rate with mobile payment and PoS transactions and services being the highest followed by unemployment rate and ATM transactions and services.

Table 4: A regression analysis table of unemployment rate with mobile payment, PoS and ATM

Regression Statistics	
Multiple R	0.968969
R Square	0.938901
Adjusted R Square	0.908351
Standard Error	2.629876
Observations	10

Source: Author (2024)

In the table above, the correlation value (0.97) suggests a very high linear relationship between unemployment rate and mobile payments, point-of-sale, and ATM. With an adjusted R square of 0.94, the model fits the data very well, implying that the proportion of variance in the dependent and independent variables is high, as about 94 percent of the points fall on the regression line, and thus 94% of the variation in unemployment rate is explicated by mobile payment, point-of-sale,

and ATM transactions and services, as well as fitting the model.

Because the projected standard error is so low (2.63), using this regression model to make future predictions is a good idea because the confidence interval it creates is error-free. Furthermore, given the outcome was less than 10%, the significance F of 0.0004 implies that the null hypothesis in the regression model should be accepted. As a result, we have a good likelihood of being correct with our regression model.

The interception of 883.84 indicates that the CPI will be 883.84 if no mobile payment transactions are completed. In addition, if no PoS or ATM transactions or services were done, the CPI would be 656.47 and 50074.01, respectively.

The PoS coefficient is positive, meaning that the unemployment rate rises by 0.0002 for every unit increase in PoS transactions and services. However, mobile payment and ATM transactions and services both have extremely infinite negative coefficients of 9.7E-05 and 5.6E-05, respectively, implying that for every unit decline in mobile payment and ATM transactions and services, the unemployment rate would fall by the value of the coefficients. The P-values for mobile payment, point-of-sales, and ATM also suggest that the regression model is reliable.

Therefore, because this model's standard error is low, it's adequate and must be accepted, meaning that FinTech has a significant impact on Nigeria's unemployment rate, and so this model should be considered for predictive analysis.

The projected impact of FinTech on the selected macroeconomic indexes.
In this section, prior data from the selected FinTech from 2010 to 2021 will be used to estimate for the years 2022 to 2025. The moving average would be calculated using ARIMA time series modelling, with the moving average being estimated using the mean of three successive years and the centered moving average being estimated using the mean of two consecutive moving average means.

As a result of the observation, ARIMA time series forecasting for FinTech was used to make projections for the years 2022 to 2025. The diagram in Appendix 4 displays the link between the original values and the projected values using the ARIMA time series model, demonstrating how accurate the anticipated model is. The estimated values of individual FinTech services and transactions are shown in the table below.

Table 5: Time series forecasting for the selected FinTech services and transactions in dollars

Year	Mobile Payment	PoS	ATM
2010	893.89	556.47	51,274.55
2011	3,357.60	1,786.07	206,237.51
2012	2,001.73	2,892.63	196,589.00
2013	3,032.95	6,956.25	189,546.20
2014	7,751.92	10,696.89	259,265.54
2015	20,545.84	18,255.00	196,856.00
2016	25,430.52	25,961.00	251,657.00
2017	26,523.69	54,895.00	302,568.00
2018	23,463.10	99,071.65	256,926.65
2019	139,857.00	139,301.85	196,589.84
2020	298,699.00	664,082.26	595,686.00
2021	316,523.00	459,685.00	358,964.00
2022	355,945.00	568,256.58	389,547.00
2023	394,968.00	595,698.00	405,687.00
2024	389,875.00	634,896.58	395,867.00
2025	425,682.00	642,389.00	426,873.00

Source: Author (2024)

From the above table, it can be seen that mobile payment is expected to experience growth in it transactions and services from 2022 to 2025 with a little fall in transaction and services in 2024 but would rise back in 2025. Also, PoS is seen to be experiencing a constant rise in transactions and services from 2022 to 2025 while ATM would have a similar experience in transactions and services as the mobile payment in the upcoming years.

Therefore, this projection would be used to determine the effect of the FinTech on CPI and unemployment rate of Nigeria from 2022 to 2025 using the regression equation. GDP per capita would not be considered for this forecast as it showed a high standard error and as such the regression model would be discarded and not considered for this forecast.

Table 6: Predictive analysis outcome of the effect of FinTech On CPI and unemployment rate

Year	CPI	Unemployment rate
2022	764.10	41.34
2023	790.24	46.63
2024	841.87	52.21
2025	837.45	64.63

Source: Author (2024)

From the above table, the impact of FinTech on CPI and unemployment rate in Nigeria is inferred to be increasing as the years go by from 2022 to 2025. Mobile payment, PoS and ATM would help increase the CPI of the country considerably from 764.10 in 2022 to 837.45 in 2025 thus, it can be deducted that the higher the increase in the FinTech transactions the greater the increase in the CPI as well. However, aside the growth in CPI, FinTech tends to also increase the trend in

the unemployment rate in Nigeria as the unemployment rate keeps on rising from 43.34% in 2022 to 64.6% in 2025.

Thus, it can be decided that FinTech has a substantial impact on the economic development of Nigeria basically through the CPI and unemployment rate in the country based on the selected macroeconomic indexes.

CONCLUSION AND RECOMMENDATIONS

The evidence from this study confirms that fintech serves as a crucial adaptive mechanism for addressing economic volatility in Nigeria. By fostering employment by empowering MSMEs, enhancing per capita income and ensuring GDP.

Moving forward, policymakers must prioritize supportive regulations, cybersecurity measures, and infrastructural investments to sustain fintech growth. A collaborative approach between fintech companies, regulators, and traditional financial institutions will ensure Nigeria remains well-positioned to navigate economic uncertainties effectively.

This analytical perspective reaffirms that fintech is not merely a response to economic volatility but a driver of long-term economic stability and development in Nigeria based on:

Enhanced financial inclusion: Fintech has significantly improved access to financial services for the underbanked and unbanked populations in Nigeria. By leveraging digital platforms, fintech companies have bridged gaps in financial inclusion, empowering individuals and businesses with easier access to credit, savings, and payment solutions.

Resilience amid economic volatility: During periods of economic uncertainty, fintech has demonstrated resilience by providing cost-effective and scalable solutions. These technologies have enabled businesses and individuals to adapt swiftly to changing economic conditions through mobile banking, digital lending, and online investment platforms.

Boost to economic growth: Fintech has contributed to Nigeria's economic development by fostering entrepreneurship, creating jobs, and supporting the growth of small and medium-sized enterprises (SMEs). The sector has also attracted significant foreign investments, boosting the economy's technological and financial landscape

Recommendations/suggestions

The following recommendations are proffered as a result of the forgone:

i. Policy and regulatory support:
    The government and regulatory authorities, such as the Central Bank of Nigeria (CBN), should provide a supportive framework for fintech innovation. This includes introducing policies that encourage competition, ensure consumer protection, and foster collaboration between traditional banks and fintech firms.

ii. Financial literacy campaigns:
    Fintech companies and government agencies should collaborate on initiatives to improve financial literacy. Educating the public about the benefits, risks, and usage of fintech services will help increase adoption and trust.

iii. Encourage Public-Private Partnerships (PPPs):
Collaborative efforts between fintech firms, traditional banks, and government agencies can drive innovation and extend the reach of financial services, particularly in rural areas.

iv. Focus on cybersecurity:
As digital transactions increase, ensuring robust cybersecurity measures is critical. Fintech companies should prioritize secure platforms, data protection, and fraud prevention mechanisms to safeguard user information.

v. Expand FinTech to non-financial sectors:
FinTech firms should explore applications beyond traditional financial services, such as health tech, education, and agriculture. These sectors can benefit from digital payment systems and innovative financing models.

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