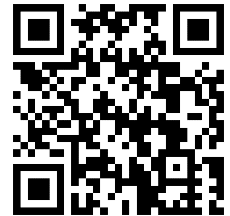


Impact of Fintech on Economic Development of Third World Countries: A Focus on Nigeria



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ABSTRACT: The digital age has ushered in a transformative shift in the financial industry, permitting financial institutions to reach previously "unbanked" consumers in emerging economies while keeping current traditional bank customers (Saal et al., 2017). The integration of technology into daily life has given rise to various technology acceptance models and unique user interactions. This study assessed the impact of FinTech on the economic development of developing countries, with a specific focus on Nigeria, to understand its contributions and identify areas for improvement. Data for this study was collected from the Central Bank of Nigeria, Macrotrends, and Statista, covering data from the past ten years, 2010 to 2020. Regression analysis was used in executing the data analysis. 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. The study concludes that FinTech has a limited impact on GDP per capita, it significantly influences consumer price index and the unemployment rate, indicating its critical role in shaping Nigeria's economic landscape.

KEYWORDS: Fintech, Economic Development, Nigeria

INTRODUCTION

The digital age has ushered in a transformative shift in the financial industry, permitting financial institutions to reach previously "unbanked" consumers in emerging economies while keeping current traditional bank customers (Saal et al., 2017). The usage of technology in our daily lives has resulted in a variety of technology acceptance models and quirks in how different people connect with it. Technology, dubbed Financial Technology (FinTech), has been welcomed into the Financial Services sector, and it is not going anywhere. The FinTech call is loud, and several countries have chosen or are embracing and trying a variety of governing and adaptable business models in order to ensure a workable ecosystem for their FinTech development, as well as the larger economy and job development (Fintech, 2019).

According to Ndako (2010), FinTech actually has the potential to catalyst economic growth and it is seen as a precondition for economic growth and its contribution to economic growth can be guaranteed only by inventions that can sustain such growth overtime. The revolution of FinTech has progressed to a new stage, with developed-country impact dimensions that are comparable to those of developing-country impact. Different components of FinTech effects have an impact on these people's financial and economic activities (Tidjani, 2020). For this reason it becomes important to assess the level of impact that the adoption of FinTech in these countries has brought about. If it has, how well has it impacted the economy? If it hasn't what are the reasons responsible for the lack of positive impact and what solution can be proffered.

Although the introduction of these FinTechs is dramatically altering the way people and corporations engage in the financial industries, many concerns remain unaddressed among market participants. Current legislation' applicability, as well as the language of upcoming regulations, must be clear and open in order for FinTech firms to manage the business's ever-changing atmosphere effectively. Failure to do so will have a significant negative impact on FinTechs' ability to engage in the financial system

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and propel its expansion, as well as the Nigerian economy. Many studies have shown that FinTech actually catalyzes economic growth and it is a prerequisite for economic development (Fintech, 2019).

This is the context in which this work is conceptualized – to assess the impact of FinTech on the economic development of developing countries, using Nigeria as a case study.

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 started an effort to make technology collaboration easier. Over a period of time 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 (s). 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. Most FinTech companies are still learning about the vastly different journeys that customers in third-world countries take. What a FinTech company would be required to provide is widespread financial inclusion, which will catalyze concrete economic progress in third-world nations (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. In China, FinTech has grown at a considerably higher rate than in the United States. This success in China is due to the convergence of financial and real-world demands, rather than a technological edge. Various countries use different financial systems, which is a startling but often overlooked truth. One could believe that a decent monetary invention or preparation would be generally recognized, at minimum in the more developed countries. FinTech is transforming the way financial services (FS) are seen, produced, advertised, transported, and disbursed. 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. On both fronts, technological improvement has been

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critical to progress. As a result, the progress of finance is inextricably linked to technological advancement. FinTech was not even invented until after the concept of digital finance was introduced (Chen, 2016).

Also McKinsey & Company (2020) stated that: since 2010, the FinTech industry has seen substantial expansion. The perfect prescription for a booming FinTech sector was created by a young generation, increased smartphone penetration, and a targeted governmental drive to expand financial inclusion and paperless payments. This has opened way for FinTech's innovations that have fast taken advantage of such opportunity, many companies are pushing up to build superior wealth throughout the value stream to tackle key issues such as reasonable repayments, quick loans, and versatile investment accounts, amongst others as shown in the table below;

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 service 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 favourable 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 tracking, 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

Sources: Topsy et. al., (2020)

Simultaneously, a young population, rising smartphone penetration, and a targeted legislative push to improve financial inclusion and cashless payments are combining to produce the ideal recipe for a booming FinTech sector. Nigeria presently has over 200 FinTech startups, as well as a number of FinTech solutions offered as part of banks' and mobile network operators'

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product portfolios. Nigeria's thriving FinTech ecosystem raised more than \$600 million in funding between 2014 and 2019, accounting for 25% (\$122 million) of the \$491.6 million generated by African tech firms in 2019, second only to Kenya with \$149 million (Topsy et. al., 2020; African Tech Startups Funding Report, 2019).

FinTech can be seen as a viable solution to Nigeria's long-standing capital market problems. The administration's use of network digital technology, Unstructured Supplementary Service Data (USSD), Near Field Telecommunication technologies, and other innovations is a game-changer in achieving the societal aim of delivering financial assistance for people.

The need for FinTech in Nigeria

In the future years, the need for FinTech will increase in third-world countries. 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. According to Idris (2021), there are five key statistical facts that make the possibility for FinTech operations in Nigeria and other third-world countries enticing:

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 in the figure below;

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

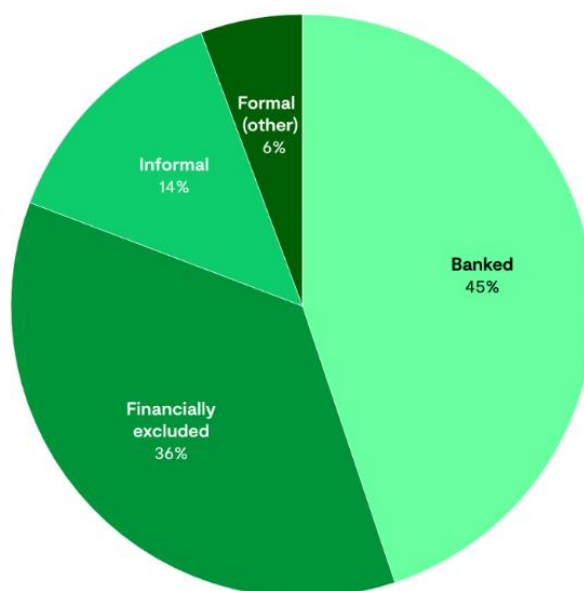


Chart: Rest of World - Source: [EFInA 2020 Survey](#).

Fig 1. Statistical behaviour of banked and unbanked individuals in Nigeria

Source: EFInA, (2020)

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 2020). 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 a large number of 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 a terrific time for FinTech to investigate and create enticing opportunities for industry entrepreneurs.

2. Electronic payments, often known as e-payments, have grown dramatically since 2014, increasing steadily over a five-year period and reaching \$256 billion in 2019 (EFInA, 2020). This is depicted in figure 5 below;

Electronic payments are growing fast

Nigerians transferred 105 trillion naira (\$256 billion) in 2019.

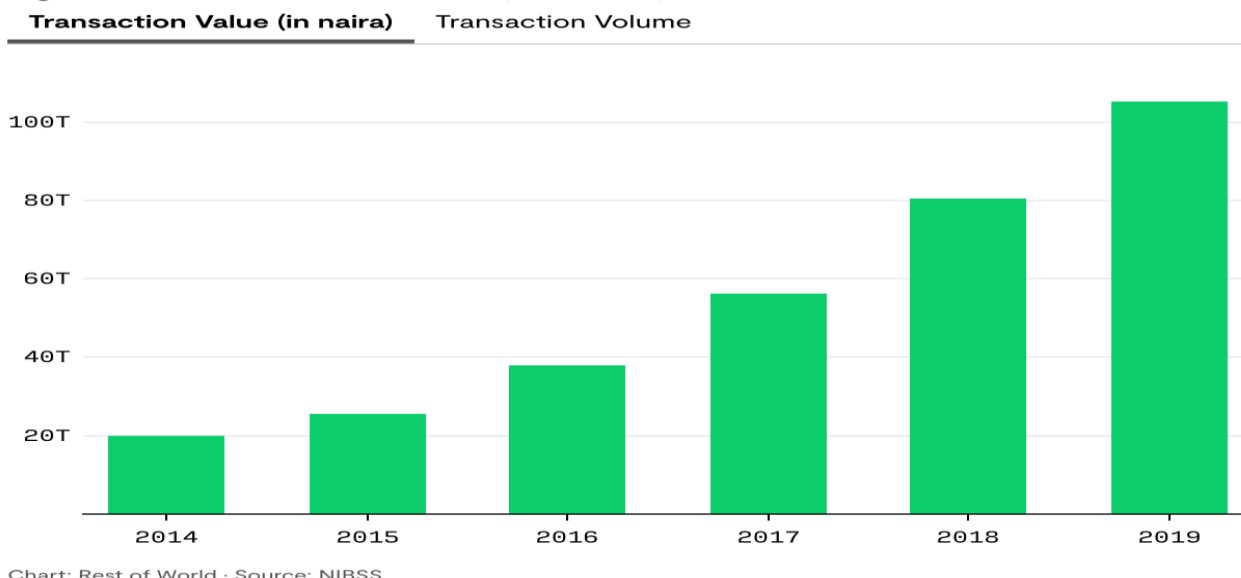


Fig 2. Electronic payment growth in Nigeria
Source: EFinA, (2020)

The above bar graph depicts Nigeria's digital payment history as recorded by the Nigeria Inter-Bank Settlement Scheme (NIBSS) (NIBSS 2020). Since 2014, digital payments have increased by more than fivefold, reaching 105 trillion naira (\$256 billion) in 2019. 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 2020, 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.

Nigeria's three unicorns are rivaling banks in valuation

Interswitch, Flutterwave, and OPay all hit the \$1 billion mark within the last two years.

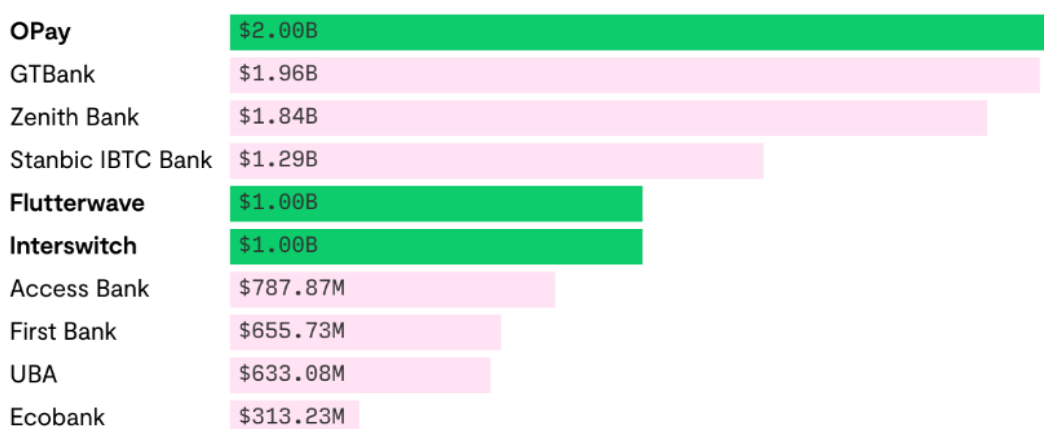


Chart: Rest of World

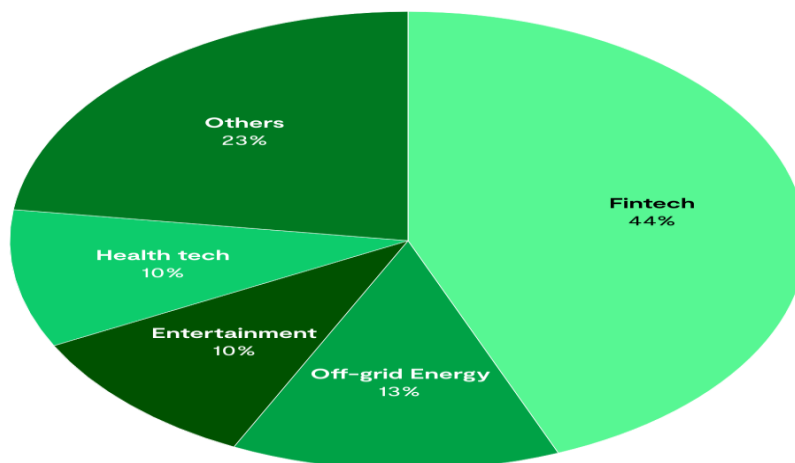
Fig 3. Nigeria's three unicorns are rivaling banks in valuation
Source: EFinA, (2020)

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 agency banking startups. Investors believe Nigerian entrepreneurs are safe risks that will pay off. This can be seen in the pictorial view below;

Fintechs dominate startup funding in Nigeria

The fintech sector accounted for the majority of startup investments in 2020.



Data only captures equity deals above \$200,000.
Chart: Rest of World · Source: Partech Partners

Fig 1. FinTech dominate startup funding in Nigeria
Source: EFINA, (2020)

4. Nigerians have a \$3.6 billion interest in savings and investing items (EFInA, 2020).

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 2020, the amount has increased dramatically. The graph below depicts Nigerian investment patterns over the last decade,

Nigerians are looking for places to invest their money

Deposits into savings and investment products have risen sharply after Nigeria's recession in 2016, with total deposits reaching almost 1.5 trillion naira (\$3.6 billion) in 2019.

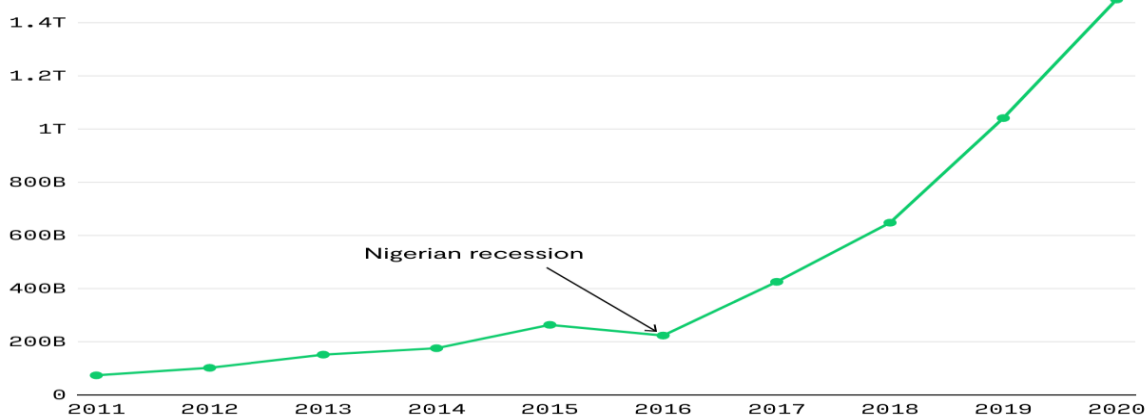


Chart: Rest of World · Source: SEC

Fig 4. Nigerian investment patterns over the last decade
Source: EFINA, (2020)

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From the foregoing, it is clear that FinTech is critical in nations where the majority of the population is unbanked and where poverty is a major concern. FinTech is thought to have the ability to accelerate the development of the financial industry and, as a result, the economy.

Economic development in Nigeria

The financial system reforms in Nigeria, which peaked with the 1986 deregulation, had an impact on the nation's monetary development and the financial sector's significance to economic development (Onoriode & Olu-Coris, 2013). However, since then, the rising internationalization of money system, as well as the Nigeria banking system's increased integration with the globalized trade, have spurred interest in the amount of financial depth that has happened, according to Nnanna and Dogo (1998). Adebayo (2019), described economic development as an aggregate of accumulated and sustained economic growth over a given time. Growth in this regard is an essential condition for expansion, nevertheless it is not adequate for it to occur. Annual growth in vital economic indices, such as GDP, NI and balance of trade, must be sustained over a considerable length of time for economic development to occur.

Global Economics (2021), posited that economic development will create economic freedom for people, allowing them to make choices that give them leverage over poverty, poor health, corruption, ignorance and poor government. Assessment of economic development could be done by taking a range of indicators into consideration. These factors incorporate per capita income, life span, educational attainment, and poverty levels. These factors incorporate per capita income, life span, educational attainment, and poverty levels (Global Economics, 2021). The economy however, is a pot-pouri of human activities and is divided into sectors/industries and firms. Britannica (2021), identified four sectors or industries of an economy, namely; primary, secondary, tertiary and quaternary sectors. Economic activities at any of these levels requires financial capital to prosper, therefore, an economy desirous of development must pay good attention to developments in the financial sector (Sakshi, 2017).

The financial system, according to Nzotta (2004), acts as a stimulant for commercial growth through numerous official constructions. The scheme actively pursues out and entices a conservation and idle storage cash, which it then distributes to industrialists, industries, individuals, and the administration for investment plans and other reasons with the goal of making a profit. This is the foundation for pecuniary growth. The fiscal system is important in the process of mobilizing and allocating savings for useful purposes, as well as providing financial administration structures and the foundation for controlling runniness in the economy. It also helps firms and businesses reduce the risks they confront in their production processes, enhance portfolio diversification, and protect the market from the ups and downs of global economic swings. Any economic system's growth, stagnation, or even decline is influenced by finance (Onoriode & Olu-Coris, 2013).

Nigeria is making progress toward modernization. After branding itself as Africa's "giant," the country now needs to demonstrate its potential by bringing its standards up to par with those of other rapidly rising economies across the world. Even though Nigeria has a high poverty rate, its GDP is larger than that of other African countries. Nigeria has traditionally lagged behind Western economies. Nigeria, nearly fifty years after attaining independence, should now compete with global economies rather than just African economies. The country is rich in natural resources, and it has recognized that by taking the right steps, it can accelerate its economic development (Yusuf, 2014).

The importance of the financial sector to the economy is not negotiable. According to Bakar and Sulong (2018), the financial sector attracts deposits and facilitate movement of funds from surplus to deficit side. It ensures sustainable growth, by mobilising savings and surpluses into the production sectors of the economy. The efficient allocation of resources in aid of productivity, ultimately depends on the financial sector. To be able to achieve this, it operates in practice as a system of firms, institutions and services which constitute the financial system. Five basic components of the system are identifiable namely, financial institutions such as banks and insurance firms; financial markets where financial instruments, such as assets and securities, are generated or transferred; assets are created or transferred; and financial instruments are the items exchanged in a financial market; financial services where assets and liability managers operate and money market that provides the legal tender for economic exchanges (Sati, 2020). As a system, financial sector performs crucial roles in aid of economic growth and development. These include credit provision in support of firms and government, liquidity provision which allows cash flow within the economy, and risk management services such as is available in insurance. Apart from the aforementioned functions of the financial system, it creates large volume of employment opportunities, thereby contributing directly to economic development. It is in the pursuit of efficient delivery of its outlined functions that financial technology came into being.

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;

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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 most 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 pass ten years.

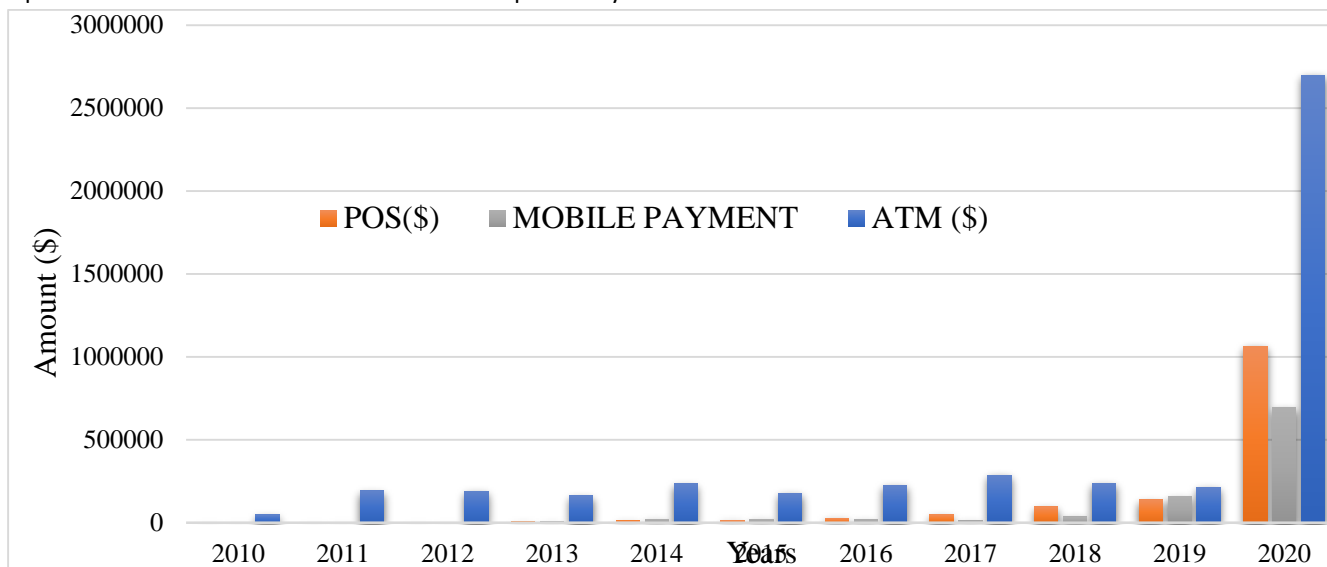


Fig. 5 Pictorial view of the selected FinTech income generation over the decade

Source: created by author

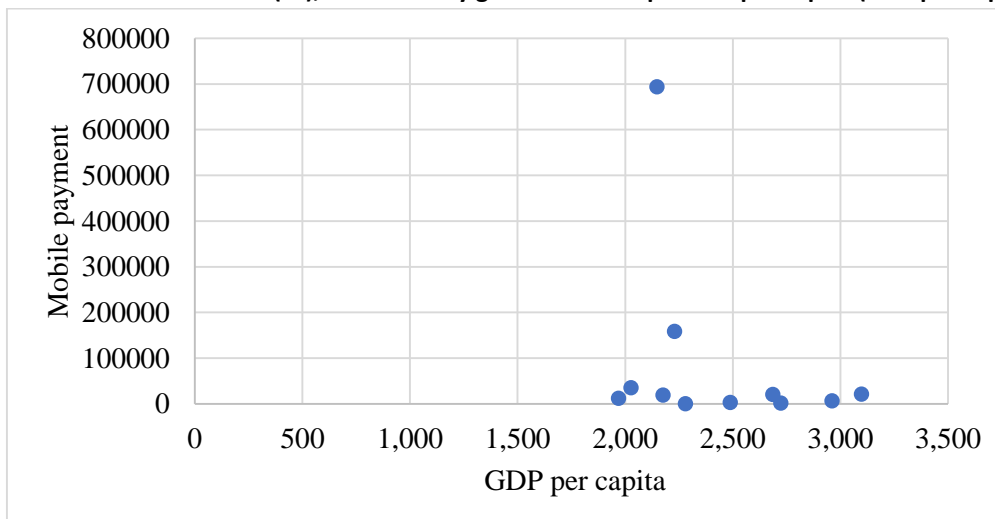
From the above diagram, it can be seen that there is a constant undulating rise and fall in the production and services of all the selected FinTech from 2010 to 2020 where in 2020, they all yielded the highest income and popularity. The sharp increase in 2020 is expected to be as a consequence of the COVID-19. Thus, it can be seen that, these services and products are 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 much grounds and acceptance with PoS starting from 2017 and mobile payment in 2019.

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. 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 analysing the overall impact of FinTceh on the economy of Nigeria.

3.1. Effect of FinTech on National Income (NI), measured by gross domestic product per capita (GDP per capita).



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Fig 6. Scatterplot of GDP per capita and mobile payment in dollars.

Source: created by author

For the GDP per capita and mobile payment, the scatterplot shows a slightly negative relationship, because as GDP per capita increases, the mobile payment services and transactions decreases. The relationship appears to be slightly low linear correlation as seen in the calculated coefficient of correlation as -0.3 which shows the relation between the GDP per capita and mobile payment is weak.

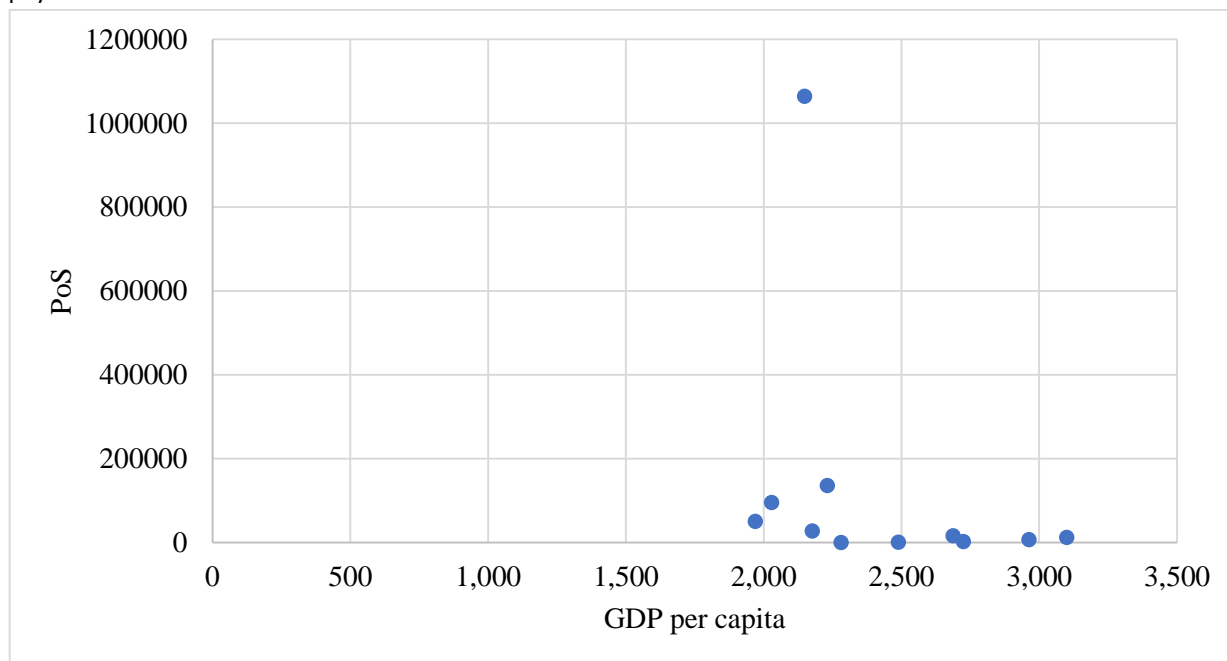


Fig 7. Scatterplot of GDP per capita and PoS in dollars

Source: created by author

For the GDP per capita and PoS, the scatterplot shows a moderately weak negative relationship, because as GDP per capita increases, the PoS transactions and services decreases. The relationship appears to be slightly partial correlation, this is seen in the calculated coefficient of correlation as -0.32 which shows the relation between the GDP per capita and PoS is weak.

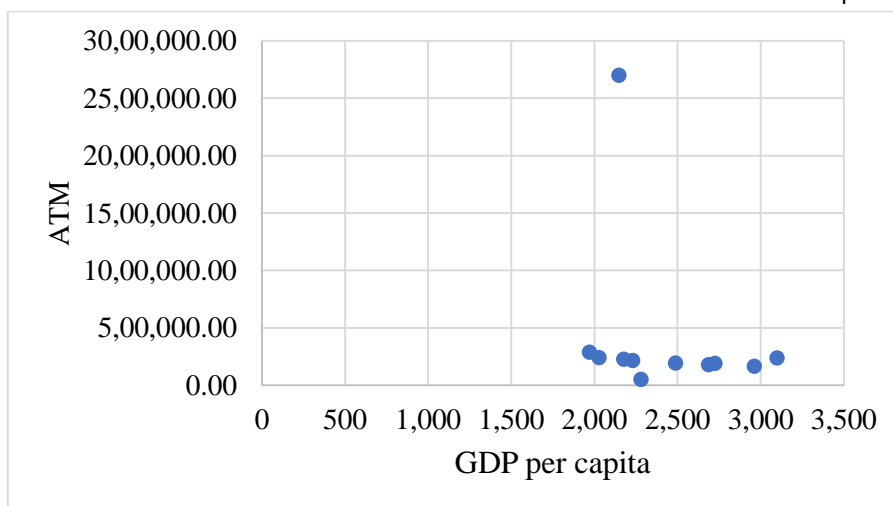


Fig 8. Scatterplot of GDP per capita and ATM in dollars

Source: created by author

For the GDP per capita and ATM, the scatterplot shows a relatively weak negative relationship, because as GDP per capita increases, the ATM services and transactions decreases. The relationship appears to be low and this can be proved by the calculated coefficient of correlation which is -0.26 , which shows that the relation between the GDP per capita and PoS is weak.

Conclusively, it can be inferred from fig. 13 to fig. 15 that GDP per capita has a relatively low negative relationship with the selected FinTech, which means that an upsurge in GDP per capita means a decrease in FinTech transactions, services and

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income. GDP per capita with PoS has the highest negative correlation followed by GDP per capita with mobile payment then GDP per capita with ATM.

Table 2. A regression analysis table of GDP per capita with mobile payment, PoS and ATM

<i>Regression Statistics</i>	
Multiple R	0.730612142
R Square	0.533794102
Adjusted R Square	0.300691154
Standard Error	334.5158138
Observations	10

Source: created by author

The correlation coefficient (0.73) in the preceding table indicates a moderately high linear association between GDP 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 so big, employing this regression model for future predictions would provide unfavorable results because the confidence interval obtained would be prone to many errors.

Furthermore, the significance F of 0.18 (as shown in Appendix 1) 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 done, the intercept of 883.84 shows that GDP per capita will be 883.84. Also, in terms of PoS and ATM, it can be seen that if no PoS or ATM transactions and services are conducted, GDP per capita would be 656.47 and 50074.01, respectively. (Value tables can be found in Appendix 1)

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.

3.2 The FinTech influence of on the Consumer Price Index (CPI) of Nigeria.

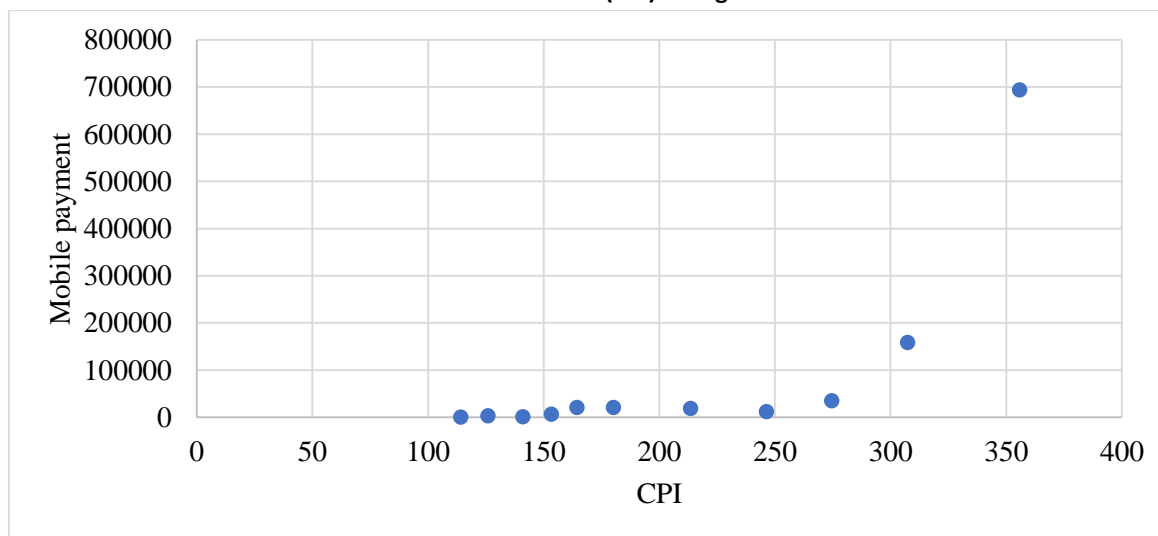


Fig 7. Scatterplot of CPI and mobile payment in dollars

Source: created by author

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The scatterplot of CPI and mobile payment above shows a relatively exponential positive relationship, because as CPI increases, the mobile payment transactions and income also increases. The relationship appears to be great and this can be seen in the calculated coefficient of correlation which is 0.73, which shows that the relation between the CPI and mobile payment is strong.

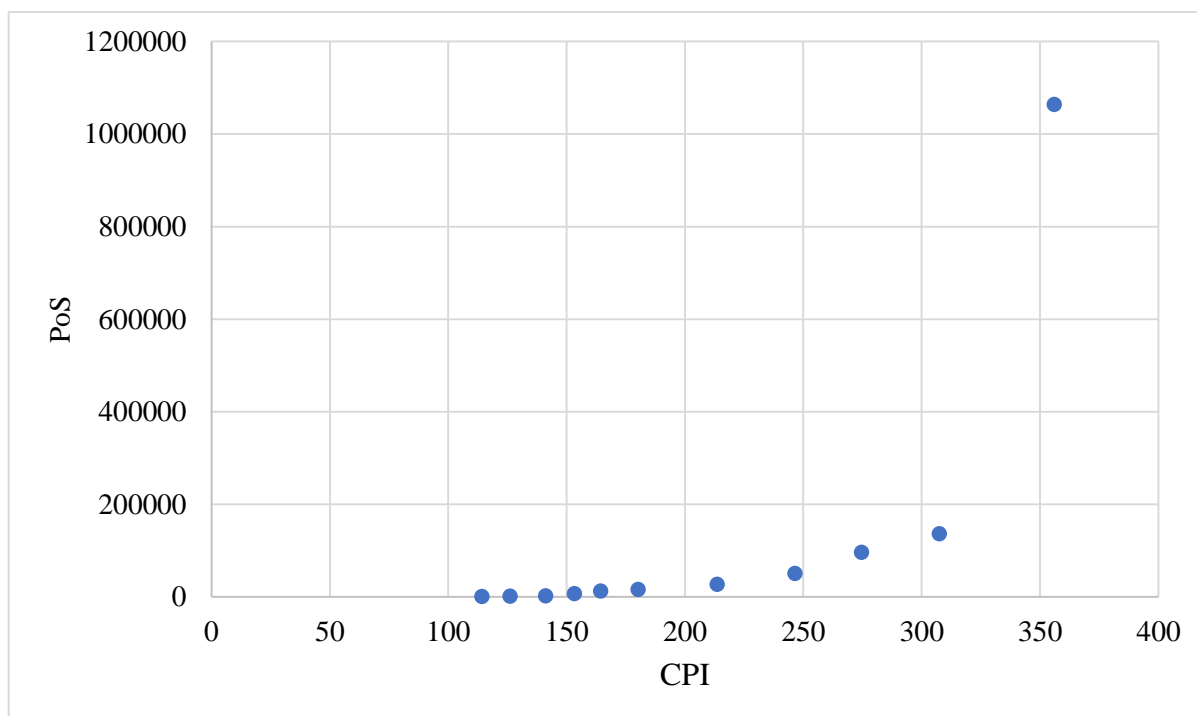


Fig 8. Scatterplot of CPI and PoS in dollars

Source: created by author

The scatterplot of CPI and PoS above shows a linearly increasing positive relationship, because as CPI increases, the PoS transactions and services also increases. The relationship appears to be good and this can also be seen in the calculated coefficient of correlation which is 0.72, which shows that the association among the CPI and PoS is strong.

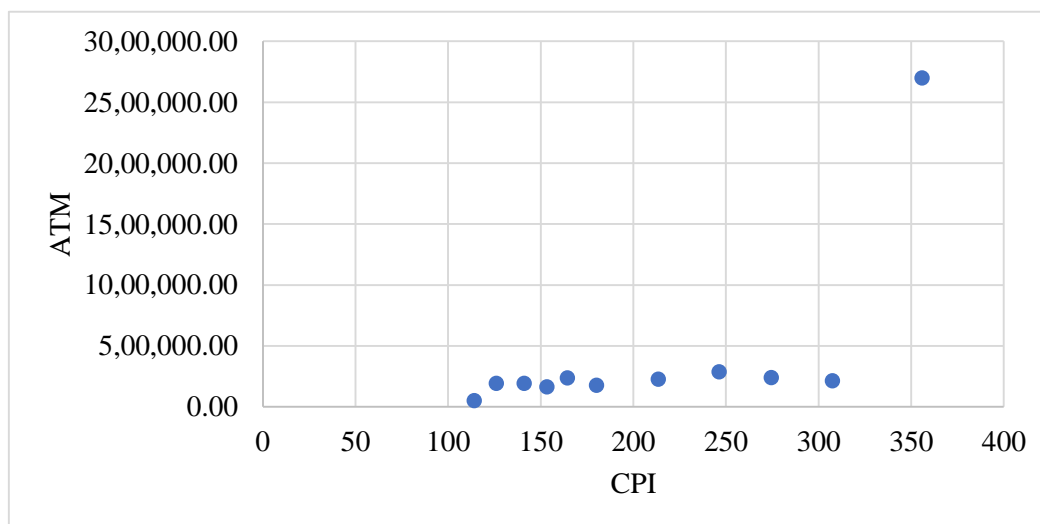


Fig 9. Scatterplot of CPI and ATM in dollars

Source: created by author

With reference to CPI and ATM in the above diagram, it can be seen that there is a relatively loose positive relationship between CPI and ATM, because as CPI increases, the ATM services and transactions also increases. 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.

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Therefore, it can be concluded that from fig. 16 to fig. 18 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. A regression analysis table of CPI with mobile payment, PoS and ATM

<i>Regression Statistics</i>	
Multiple R	0.932866
R Square	0.870239
Adjusted R Square	0.805358
Standard Error	34.13877
Observations	10

Source: created by author

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 significance F of 0.004 (as shown in Appendix 2) 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. (Value tables can be found in Appendix 2)

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 has to be accepted, implying that FinTech has a considerable impact on Nigeria's CPI, and thus this model should be considered for predictive analysis.

3.3 The influence of FinTech on the unemployment rate of Nigeria.



Fig 2. Scatterplot of unemployment rate and mobile payment

Source: created by author

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Considering the relationship between unemployment rate and mobile payment as shown in the above diagram, it can be seen that there is a strong positive association between unemployment rate and the use of mobile payment, because as unemployment rate increases, the mobile payment services and transactions also increases considerably. Thus, the relationship appears to be very strong as the calculated coefficient of correlation which is 0.8 also proves this, which shows that the correlation between the unemployment rate and mobile payment transactions and services is strong.

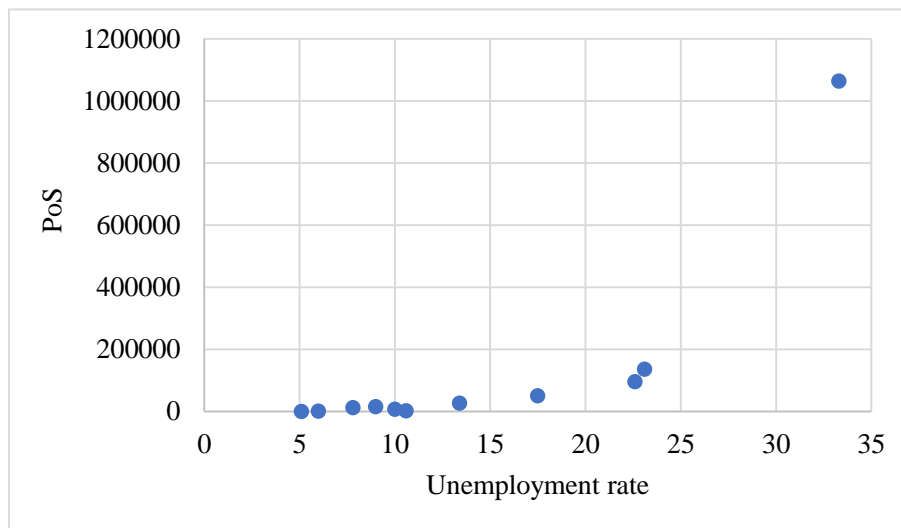


Fig 10. Scatterplot of unemployment rate and PoS

Source: created by author

With reference to unemployment rate and PoS in the figure above, it can be seen that there is a strong positive connection between unemployment rate and the use PoS transactions and services, because as unemployment rate increases, the mobile payment services and transactions also increases considerably. Thus, the relationship appears to be very strong as the calculated coefficient of correlation which is 0.8 also proves this. This shows that the correlation between the unemployment rate and PoS transactions and services is strong.

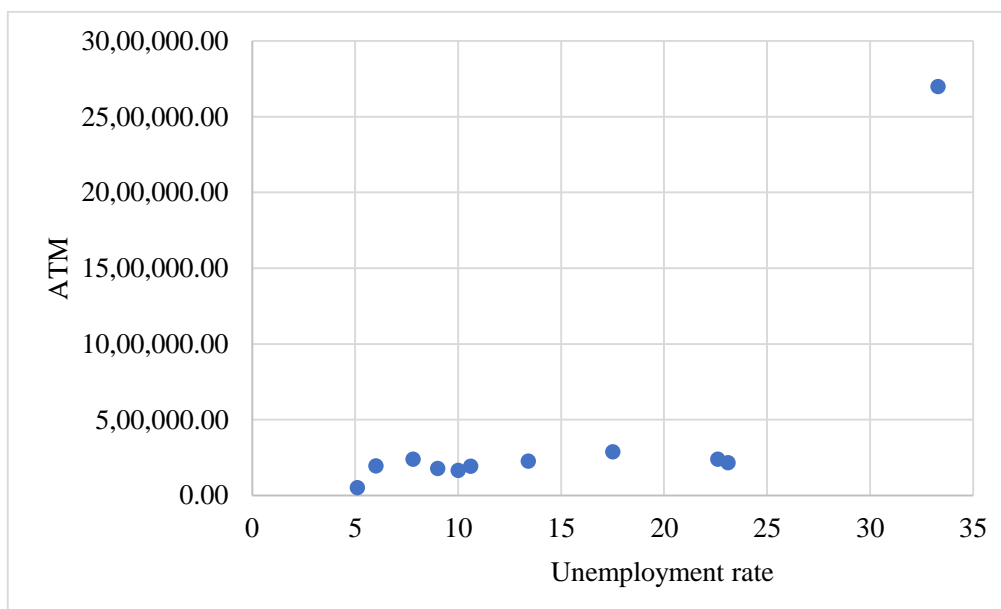


Fig 31. Scatterplot of unemployment rate and ATM

Source: created by author

Taking the relationship between unemployment rate and ATM, it 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 increases considerably. Thus, the relationship appears to be very strong as the calculated coefficient of

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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 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

<i>Regression Statistics</i>	
Multiple R	0.968969
R Square	0.938901
Adjusted R Square	0.908351
Standard Error	2.629876
Observations	10

Source: created by author

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 very error-free.

Furthermore, given the outcome was less than 10%, the significance F of 0.0004 (as indicated in Appendix 3) 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 intercept 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. (Appendix 3 has value tables.)

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-sale, and ATM also suggest that the regression model is reliable.

As a consequence, 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, to help riposte the study question. 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;

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

<i>Year</i>	<i>Mobile Payment</i>	<i>PoS</i>	<i>ATM</i>
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: created by author

From the above table, it can be seen that mobile payment is expected to experience growth in its 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, these projections 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 forecasting as it showed a high standard error and as such the regression model would be discarded and not considered for this forecasting.

Table 2. Predictive analysis outcome of the effect of FinTech On CPI and unemployment rate

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

Source: created by author

From the above table, it can be seen that 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. It can be seen that 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 deduced that the higher the increase in the FinTech transactions the greater the increase in the CPI as well. However, aside the positive growth in CPI, FinTech tends to also increase the trend in the unemployment rate in Nigeria as it can be seen that 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.

CONCLUSIONS AND SUGGESTIONS

1. This research concludes that in third-world countries, FinTech has not achieved the grounds of an economic development catalyst that it has in developed countries. Although the lack of economic development may not be directly attributed to the introduction of FinTech, it is significant to note that its introduction coincided with a slowdown in the economy. FinTech had validly and consistently performed the functions required of it, but it had failed to spark economic progress in third-world

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countries. The report does, however, point to the presence of economic development barriers that may have encroached on FinTech positions, making development more difficult.

2. In this master's thesis, a combination of correlation analysis, regression analysis and time series analysis were used. The correlation analysis was used to create the connection between the parameters using scatterplot and the coefficient of correlation while regression analysis was used to measure the influence of FinTech on the economic development of Nigeria using the three selected macroeconomic indexes that is, GDP per capita, CPI and unemployment rate. Time series analysis together with predictive regression analysis was used to make future prediction on how FinTech would affect the economy based on CPI and unemployment rate from 2022 to 2025 using previous data from 2010 to 2021.
3. From the study conducted, it is obvious that, Nigeria's GDP per capita has a relatively low negative relationship with the selected FinTech and further analysis revealed that, FinTech has little or no significant effect on the GDP per capita of Nigeria. Also, with reference CPI and unemployment rate, it showed a relatively high positive relationship with the selected FinTech and it further proved that FinTech has a considerable impact on Nigeria's economy through CPI and unemployment rate. However, FinTech has no direct consequence on the GDP per capita of the country.
4. Forecasting tactics are beneficial in operational and economic management because they assist in the establishment of acceptable expectations. In the literature, many different statistical procedures for achieving close estimations have been proposed. Using the mobile payment, PoS and ATM values generated from the time series forecasting using previous data from 2010 to 2021, the predicting model was employed to determine the projected projected values for 2022 to 2025. The output of the time series forecasting of the FinTech was used with the regression equation to predict the impact of the FinTech on the economic development using the CPI and unemployment rate, GDP per capita was not included because during the regression analysis it showed a high standard error and as such it model was discarded as it would not yield a reliable result. Thus, based on the predictive regression analysis conducted, it was evident that FinTech has a substantial influence on the economic development of Nigeria both negatively and positively, this is as a result of the fact that, when there is an increase in CPI is beneficial to the economy while an increase in unemployment rate is a threat to the economy as well.

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