IMPACT OF CRYPTOCURRENCY PRICE ON NIGERIA ECONOMY

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ABSTRACT

This research examines the following economic factors in relation to Cryptocurrencies: The Volume of Cryptos Traded (VTD), the Crypto Remittance (CRM), the Adoption Rate (ADR), the Interbank Rate (IRB), the Monetary Policy Rate (MPR), and the Exchange Rate (EXR) on the Nigerian economy. Using ex post facto research design and data from credible sources including Statista and the Central Bank of Nigeria, these key techniques were adopted; descriptive statistics, unit root test, cointegration test, and econometric model – Error Correction Model (ECM) regression. The result also show that, out of the six indices VTD, CRM, ADR, IRB MPR enhanced the gdp in Nigeria; hence more cryptocurrency activity and adoption has positive impacts on Improving the economy. Particularly, boosting the trading volumes and the remittances through cryptocurrencies improves the financial access, the importance of cross-border payment and investment, and innovation. On the other hand, the EXR affects GDP negatively implying that the domestic currency has a domineering influence over export competitiveness and therefore the economic returns. Therefore, the study concludes that, although could advance the Nigerian economy, and bring the benefits of using cryptocurrencies to the citizens, their usage types have challenges, which they pose to the users and the Nigerian government, which requires proper management. The major findings of the study regarding the correlation between GDP and the examined variables display the prospects of implementing cryptocurrencies, at the same time pointing out the aspects for policy regulation concerning the exchange rates. Some of the recommendations include; policy reforms, going for awareness creation, enhanced risk management, global synergy, promotion of investment and innovations, and monitoring of exchange rates'. These measures therefore seek to get the most out of the use of cryptocurrencies while at the same time reducing the risks associated with their usage that may affect the economic development of Nigeria.

Keywords: *Volume of Crypto Traded, Crypto Remittance, Adoption Rate, Interbank Rate, Monetary Policy Rate*

INTRODUCTION

Cryptocurrencies have been recognized as one of the biggest financial innovations in the contemporary world affecting traditional financial systems and economic theories. The first and the most popular cryptocurrency is Bitcoin which was launched in the year 2009 thus posing a foundation of cryptocurrencies. It has, however, grown immensely and currently has thousands of cryptocurrencies in the market. It has really influenced more debates among the economists, policy makers as well as investors globally as to how this growth may affect national economies.

Since its independence, Nigeria – the largest economy in the African continent has witnessed various economic instabilities including devaluations, inflation and unemployment. In this

regard, cryptocurrencies are embraced as a form of investment and as an instrument for value conservation. The Chainalysis report (2021) also reveals that Nigeria falls among the leading nations in the world by the proportion of the population engaged in cryptocurrency usage. The Nigerian government has otherwise adopted a more conservative approach with the use of cryptocurrencies, primarily due to the concerns of macroeconomic stability, money laundering, and fraud (Fakunmoju, et al., 2022).

The effect of fluctuations in Cryptocurrencies prices in Nigeria can be analyzed from the following vantage points. The first major concern is the impact on monetary policy and financial system. Given that these monetary assets operate beyond the standard banking system, widespread use of cryptocurrencies threatens the stabilization of money supply as well as the effectiveness of monetary policy implemented by the central bank (Oladipupo, et al., 2023). Furthermore, very high levels of fluctuation in this area may pose a threat to financial stability since a large part of the population or financial institutions may be engaged in cryptocurrency (Yermack, 2015).

Another factor that should be taken into consideration is the place of cryptocurrencies in the process of transferring money cross-border and in trading. Remittance in Nigeria is very crucial as the country is among the leading countries in the world that receives a massive amount of remittances from its citizens who reside in different countries of the world (Suprayitno, et al., 2024). Cryptocurrencies remain a faster and potentially cheaper means to the conventional remittance tools that are always expensive and time-consuming (Ojong et al., 2019). This could help in expanding the financial sector and prop up the struggling Nigerian economy by directing more people to remit money from the diaspora (Jimoh & Oluwasegun, 2020).

Also, the change in the prices of the cryptocurrencies impacts the consumption and the investment in Nigeria. In the periods when the prices are rising, cryptocurrencies allow people to invest in them with the purpose of getting a quick profit, thus taking money from other potentially more productive industries (Joseph, et al., 2024). On the other hand, when the price level is falling, investors may experience high levels of loss, which can reduce spending power and the level of economic activity. The insights regarding these dynamics are important for policymakers to consider regarding the formulation of the right laws that will foster innovation without compromising on stability (Shonobi & Agbesuyi, 2024; Auer & Claessens, 2020).

In addition, the adoption of cryptocurrencies into the Nigerian economy can have multiple positive effects on the development of the nation and novel innovations. Cryptocurrencies and blockchain technology have provided various uses beyond being a medium of exchange, such as smart contracts, supply chain, and DeFi. These are features that can potentially spur economic growth, streamline operations, and enhance access to funds (Abu & Ohiaeri, 2023). Nonetheless, to reap these advantages, it is imperative to establish a favorable and conducive legal framework and to devote more resources in education and infrastructure to fully capitalize on these technologies (Chuen et al., 2017).

This paper will discuss on the role that price fluctuations of cryptocurrencies have on Nigeria's economy. They include aspects of financial soundness, policies, migrant earnings, expenditure, and technological advancement. Given that Nigeria now find itself in this relatively liberal environment, much is being expected from policymakers, researchers, and

other stakeholders to engage in meaningful debate towards shaping the use of cryptocurrencies to the benefit of everybody while avoiding the vices. Consequently, this article seeks to advance this discussion by presenting an extensive evaluation of the relationship between cryptocurrency prices and Nigeria's economic conditions.

Literature Review

Underpinning Theories

Underpinning Theories
The examination of the impact of cryptocurrency prices on national economies is anchored in several theoretical frameworks that provide insight into market behavior, monetary policy dynamics, and the adoption of technological innovations. Among the most relevant are the Efficient Market Hypothesis (EMH), the Theory of Monetary Neutrality, and the Innovation Diffusion Theory.

Efficient Market Hypothesis (EMH). Originally proposed by Eugene Fama (1970), the Efficient Market Hypothesis (EMH) posits that asset prices reflect all available information at any given time, thereby making it impossible to consistently achieve abnormal returns through market timing or stock selection. When applied to the cryptocurrency market, the EMH suggests that the prices of digital assets like Bitcoin, Ethereum, and other altcoins should already incorporate all publicly available data, including blockchain innovations, regulatory developments, macroeconomic indicators, and investor sentiment. In practice, however, the cryptocurrency market often exhibits anomalies such as excessive volatility and speculative bubbles, raising questions about the level of market efficiency in this domain (Ajayi, et al., 2022; Umoru et al., 2025). In Nigeria, the high volatility of crypto assets-coupled with inconsistent regulatory frameworks-further challenges the assumption of informational efficiency, particularly given the dominance of retail traders and the limited institutional presence in the market (Acho, 2021; Abu & Ohiaeri, 2023).

Theory of Monetary Neutrality. The Theory of Monetary Neutrality asserts that changes in the money supply have no long-term effect on real economic variables such as output, employment, and investment. According to this theory, monetary interventions primarily influence nominal variables like price levels and wages in the short run, but the real economy eventually adjusts to these changes (Faria et al., 2023). This principle becomes particularly relevant in discussions about the macroeconomic influence of cryptocurrencies, especially in economies like Nigeria where the adoption of digital currencies is growing rapidly. If cryptocurrencies such as Bitcoin or stablecoins begin to represent a significant portion of the effective money supply, their impact on inflation, exchange rates, and real sector activities cannot be dismissed as neutral - especially in a setting where traditional monetary authorities (like the Central Bank of Nigeria) have limited control over these decentralized systems (Mohammed et al., 2022; Oladipupo & Amodu, 2022). Furthermore, concerns have been raised about whether cryptocurrencies may erode monetary policy effectiveness by enabling capital flight, currency substitution, and informal financial transactions (Ngong, 2025; Okpalaojiego, 2021).

Innovation Diffusion Theory.Developed by Everett Rogers (2003), the Innovation Diffusion Theory explains how, why, and at what rate new technologies or ideas spread across societies and cultures. The theory identifies five key attributes that influence adoption: relative

advantage, compatibility, complexity, trialability, and observability. These dimensions are particularly pertinent when analyzing the diffusion of cryptocurrencies in Nigeria, where adoption has been driven by factors such as dissatisfaction with traditional banking systems, youth-driven digital entrepreneurship, inflation hedging, and remittance efficiency (Ajibola, Fasina, & Balogun, 2024). The observable advantages of digital assets - such as borderless transactions and decentralized finance (DeFi) - have accelerated their uptake, especially among tech-savvy populations and SMEs seeking alternatives to conventional financing (Olorundare et al., 2023). However, challenges related to technological complexity, regulatory uncertainty, and low financial literacy continue to shape adoption patterns across socio-economic groups (Oladipupo & Amodu, 2022; Mohammed et al., 2022).

Empirical Review

Okpalaojiego (2021) examines the effects and implications of a cryptocurrency ban on the Nigerian economy. This study aimed to ascertain the perspectives of Nigerians and cryptocurrency traders regarding the effects and implications of the cryptocurrency ban on the Nigerian economy. The researcher employed a survey research design and utilized a random sampling technique. The study sample consisted of 400 individuals selected from a population of 4,000, which included crypto traders, bankers, bank customers, university staff, students, and the general public. The data were acquired through structured questionnaires and evaluated using mean score averages. The researcher found that the abrupt prohibition of cryptocurrency trading and transactions has significantly destabilized the crypto market in Nigeria, inflicted emotional distress on crypto traders, and hindered their ability to purchase cryptocurrencies using credit or debit cards issued by Nigerian banks. The ramifications of this include, among other factors, that the prohibition may hinder individuals from owning cryptocurrencies, as they are unable to purchase or sell them. This may result in ongoing depreciation of the Naira, financial losses for Nigerians, and ultimately lead to significant unemployment, destitution, and hunger among the numerous unemployed youths who rely on cryptocurrency for their livelihood.

Acho (2021) investigates the impact of legalizing cryptocurrency as a means of exchange on the Nigerian economy. Consequently, both primary and secondary data gathering approaches were employed to conduct this research. Questionnaires were distributed to collect pertinent data from the management of public and private financial institutions and enterprises. Tables and percentages were utilized to analyze the acquired data, the Pearson product-moment correlation coefficient was employed to assess the link between the variables, and the Z-test was applied to evaluate the made hypothesis. The study identified, among other findings, that the utilization of cryptocurrency has both hazards and rewards, and that its adoption will foster economic growth.

Mohammed et al. (2022) investigated the impact of cryptocurrencies on inflation in Nigeria. The study employed Vector Auto-regression (VAR) to examine multivariate time series data from 2009Q1 to 2021Q4. The impulse response analysis indicates that cryptocurrency exhibits a positive reaction to inflation during the initial three periods, followed by a negative response in subsequent periods, whereas money supply maintains a positive response throughout all periods. Nonetheless, the results from variance decomposition indicate that bitcoin contributes minimally to inflation variation throughout the periods, whereas money supply accounts for significant inflation fluctuations.

Ajayi et al. (2022) investigated the correlation between cryptocurrency fluctuations and exchange rate dynamics in Nigeria. The cryptocurrencies selected for the study include Bitcoin, Ethereum, Litecoin, Ripple, and Binance Coin, which are the most actively traded in Nigeria. Augmented Dickey-Fuller (ADF) test, Johansen test Cointegration and Vector Autoregressive (VAR) analyses were conducted on monthly exchange rate data and selected cryptocurrencies over a four-year period (45 months). The cointegration test results indicated a long-term link among the variables. The ECM results indicated that approximately 6% of the short-run disequilibrium is being rectified and assimilated into the long-run equilibrium connection. Furthermore, the Variance Decomposition analysis indicated that Ripple exhibits the greatest fluctuations in exchange rates both in the short and long term. The current value of the exchange rate exhibits minor adjustments in response to fluctuations in bitcoin. Ripple and Bitcoin exhibit the most significant fluctuations in exchange rates.

Oladipupo and Amodu (2022) examined the impact of the cryptocurrency prohibition on the advancement of digital money in Nigeria. This study is based on the realism hypothesis. The research utilized a descriptive survey design, including a population of 165 bankers, university instructors, and cryptocurrency dealers. The study employed purposive sampling to choose all respondents, and data were collected using a standardized questionnaire. The Statistical Package for Social Sciences (SPSS) was employed to analyze the data, and the results were presented using tables and descriptive analysis. The results indicate that the prohibition of cryptocurrencies significantly influences the implementation of e-Naira; nevertheless, there is no corresponding rise in the acquisition and utilization of e-Naira. The ban has adversely impacted financial inclusion and diminished capital inflow to commercial banks in Nigeria. The report indicates that the advent of bitcoin has created a demand for cybersecurity in banking operations.

Abu and Ohiaeri (2023) investigated the influence of cryptocurrency on the valuation of currency in Nigeria. Utilizing time series data obtained from Statista, investing.com, and the CBN bulletin from January 2019 to December 2022. The data was analyzed employing descriptive and inferential statistics. ECM were estimated based on the results of the stationarity test. Post-estimation tests were also undertaken. The findings indicated that the volume of cryptocurrency traded (VOT) exerts a substantial positive influence on the exchange rate (EXR), suggesting that increased trading volumes of cryptocurrencies lead to an appreciation of the local currency. The adoption rate (ADR) of cryptocurrencies exerts a substantial negative influence on the exchange rate, indicating that heightened adoption results in the devaluation of the local currency. The inflation rate (IFR) exerts a positive influence on the exchange rate, suggesting that elevated inflation rates correlate with increased exchange rates, which may result in the depreciation of the local currency. The monetary policy rate (MPR) lacks a statistically significant effect on the exchange rate, indicating that alternative factors may exert a more considerable influence on the Nigerian currency rate.

Olorundare et al. (2023) examines the economic potential of cryptocurrencies, concentrating on Nigeria as a case study. The research utilized qualitative data collected using a standardized online questionnaire. The findings indicated that 69% of the participants were male, and 48.6% were aged 25 to 34. Additionally, 46.8% of respondents advocate for cryptocurrency regulation by the Nigerian government instead of an outright ban on the technology. A significant majority (73%) of respondents oppose the Nigerian government's prohibition of commercial banks engaging with bitcoin. Furthermore, a significant majority

(91%) of the participants possessed awareness about bitcoin. The study stated that central banks should intentionally embrace cryptocurrencies and establish a department to formulate laws regulating its value.

Ajibola et al. (2024) investigated the impact of digital money on Nigeria's economic growth. The mean yearly worth of Bitcoin (BTC) and Binance Coin (BNB) was employed to assess digital currency, while gross domestic product was utilized to measure economic growth. The study employed the ex-post facto approach. The study utilized data from secondary sources across a decade (2014–2023). Data regarding the gross domestic product was sourced from the CBN Statistical Bulletin, whereas the measurements for digital currencies (BTC and BNB) were obtained from the Coinmarketcap web portal. Descriptive statistics, correlation, and panel regression analysis were employed to analyze the gathered data. The findings indicate that neither Bitcoin nor Binance had a measurable effect on Nigeria's GDP from 2014 to 2023. The analysis determines that the average values of Bitcoin and Binance Coin exert no substantial influence on Nigeria's GDP.

Ngong (2025) examines the relationship between cryptocurrencies and economic growth from the first quarter of 2012 to the fourth quarter of 2019. GDP per capita quantifies economic growth. The amount of Bitcoin transactions, private sector credit, and foreign direct investment were assessed for currency circulation utilizing Engle-Granger residual co-integration, completely modified OLS, dynamic OLS, and conical co-integration regression methods. Findings reveal a sustained correlation between cryptocurrencies and economic growth. The results demonstrate a detrimental long-term correlation between LNBVT and GDP. The Central Bank of Nigeria and the government should enhance the legal framework to regulate cryptocurrency transactions. This report advocates for the enactment of robust regulations governing cryptocurrency transactions to mitigate their adverse effects on the global economy. This is feasible if the developers of cryptocurrencies establish regionally restricted or encrypted protocols.

Umoru et al. (2025) assess the dynamic influence of exchange rates and their returns on Bitcoin returns, as well as the value-at-risk (VaR) linked to each exchange rate and Bitcoin. The variance series obtained from estimating the fluctuations between present and historical Bitcoin prices through the exponential generalized autoregressive conditional heteroscedasticity (EGARCH) model was utilized to calculate Bitcoin volatility data. The return on Bitcoins was modeled as the natural logarithm of the difference between the current day's Bitcoin price and the prior day's price. This study calculated joint ARMA-FIGARCH models to analyze the returns on Bitcoin transactions and currency trading rates using time series data from February 1, 2010, to August 30, 2024. The research findings highlight a substantial dynamic correlation between Bitcoin returns and exchange rate returns across all nations.

This indicates a significant likelihood of incurring losses while investing in digital currencies such as Bitcoin. The paper's originality stems from its examination of the impact of returns on the currency exchange rates of affluent nations, as well as its estimation of the dynamic influence of Bitcoin returns on the exchange rates of the chosen countries. The analysis demonstrates a large volatility feedback impact for Bitcoin returns, while a less pronounced volatility feedback effect was observed for each of the other currencies. Investors in the foreign exchange market seeking to optimize profits with reduced risk by trading the pound sterling/US dollar, Euro/US dollar, Australian dollar/US dollar, Canadian dollar/US dollar,

Swiss Franc/US dollar, New Zealand dollar/US dollar, and Luxembourg Franc/US dollar rates represent advantageous options. In policy discussions, observing volatility characteristics is essential for enhancing forex market stability and fostering investor confidence. This research aids policymakers and marketers of financial assets in OECD nations.

Methodology

Research Design

The paper employs an ex post facto research approach whereby the study is observational in nature, aimed at exploring the relationships between variables after the occurrence of the events in question. Therefore, the use of the following design is appropriate in this study to analyze the impact of cryptocurrencies on the Nigerian economy in a retrospection based on current data. It seeks to establish relationships between the exchange rate of cryptocurrencies and the macroeconomic factors applying the historical data, towards appreciating interactions between cryptocurrencies and the Nigerian economy

Source of Data Collection

To obtain rich and credible data for the analysis, a multiple source research method was applied. To obtain data concerning cryptocurrencies, this was primarily sourced from Statista, a well-known online database that offers a vast amount of statistical information on different topics, such as the market of cryptocurrencies. The information is obtained from Statista, which uses only reliable sources when collecting data, which is ideal for this research. Also, information on macro-variables were obtained from Central Bank of Nigeria (CBN) Statistical Bulletin. CBN is the official source of macroeconomic data in Nigeria whose numbers reflect official statistics embraced by researchers, policymakers, and financial institutions. The Statistical Bulletin provides an overview of the macroeconomic figures such as the GDP, interbank rate, monetary policy rate, and exchange rates among others

Model Specification

The study utilizes the following model specification to examine the relationship between cryptocurrencies and the Nigerian economy:

$$GDP_t = \beta_0 + \beta_1 VTD_t + \beta_2 CRM_t + \beta_3 ADR_t + \beta_4 IRB_t + \beta_5 MPR_t + \beta_6 EXR_t + ECT(-1) + \epsilon t$$

Where:
- GDP_t: Gross Domestic Product at time t
- VTD_t: Volume of crypto traded at time t
- CRM_t: Crypto remittance at time t
- ADR_t: Adoption rate at time t
- IRB_t: Interbank rate at time t
- MPR_t: Monetary policy rate at time t
- EXR_t: Exchange rate at time t
- $ECT(-1)$: Error Correction Term at lag 1
- ϵt: Error term at time t

The model specification includes the variables of interest and an error correction term to capture deviations from long-run equilibrium.

Variables Description and Measurement

Dependent Variable:

GDP (Gross Domestic Product): Represents the economic output of Nigeria, measured in local currency (Naira).

Independent Variables:

VTD (Volume of Crypto Traded): Measures the trading volume of cryptocurrencies in Nigeria, expressed in Naira.

CRM (Crypto Remittance): Captures the value of cross-border financial transfers made using cryptocurrencies, measured in Naira.

ADR (Adoption Rate): Represents the rate of adoption of cryptocurrencies by individuals and businesses in Nigeria, expressed as a percentage.

IRB (Interbank Rate): Measures the interest rate at which banks lend and borrow funds from each other, expressed as a percentage.

MPR (Monetary Policy Rate): Represents the interest rate set by the Central Bank of Nigeria to influence monetary conditions in the economy, expressed as a percentage.

EXR (Exchange Rate): Measures the value of the local currency (Naira) relative to foreign currencies.

Method of Data Analysis

The method used to analyze data in this study is systematic and comprehensive and it entails the following steps. Firstly, on the descriptive analysis, the results was compared to check on the relationship of the variables to one another. This will comprise descriptive measures, mean, median, mode, range and standard deviation of the machines. Moreover, the descriptive statistics shall include measures such as Skewness and Kurtosis to determine the distribution of the variable used.

Subsequently, the stationarity characteristics of the chosen variables was analyzed with the help of the Augmented Dickey-Fuller (ADF) test. Thus, analyzing the variables will help in establishing if the variables are stationary or if they will require differencing or transformation in the subsequent steps of the analysis. Stationarity is an important step to prove the relationships between the variables.

Subsequently, cointegration test was conducted in order to determine the long run relationship between the variables. This work shall use tests such as the Johansen cointegration test. This analysis tests the co-integration of the variables in the long-run and

once can determine the stability of the relationship necessary for forecasting the effects that the use of cryptocurrencies could pose to the Nigerian economy.

Lastly, the ECM regression was applied for the tests of the long run and short run relationships between variables. In the case of the ECM regression model, the error correction term captures short-term disequilibrium and Ericson's speed of adjustment explains the extent to which the system would adjust in the long run. Namely, the chosen ECM model will estimate the speed of adjustment, which is reflected in the coefficient of the ECT, and will analyze how the variables that depart from equilibrium affect the dependent variable, i.e., GDP.

Result and Discussion

Descriptive Analysis

Table 1 Summary of Descriptive Statistics

	GDP	VTD	CRE	ADR	IBR	MPR	EXR
Mean	27472.81	27060.60	19044.23	16.66095	9.562381	12.52381	359.4271
Median	17882.46	19091.50	15869.70	14.18000	9.505000	12.50000	381.0000
Maximum	73382.77	68990.60	53448.30	60.85000	30.00000	14.00000	406.0000
Minimum	15262.31	4138.100	3681.800	-34.56000	0.000000	11.50000	306.7700
Std. Dev.	20846.19	20567.63	14047.33	16.74983	5.617867	1.005790	38.35573
Skewness	1.575892	0.786764	0.874631	0.007447	0.819940	0.116138	-0.451677
Kurtosis	3.521852	2.110724	2.539131	4.332019	5.508394	1.264145	1.576845

Source: *Author's Computation Using EView 10*

Descriptive statistics provide an overview of the variables used in the study. The mean, median, maximum, minimum, standard deviation, skewness, and kurtosis values for each variable were computed. The results indicated that GDP, Volume of Crypto Traded (VTD), Crypto Remittance (CRM), Adoption Rate (ADR), Interbank Rate (IRB), Monetary Policy Rate (MPR), and Exchange Rate (EXR) exhibited varying levels of central tendency and dispersion, with some variables showing significant skewness and kurtosis, suggesting non-normal distributions.

Unit Root Test

The Augmented Dickey Fuller (ADF) unit root test was employed for this purpose. Table 4.3.1 shows the result of the test for the ADF unit root test.

Table 2: Augmented Dickey-Fuller Unit root Stationarity Test

Variable	Test at Levels			Test at 1st difference			Inference
	ADF statistic	t-statistic	Prob.*	ADF statistic	t-statistic	Prob.*	
GDP	-1.093341	-2.941145	0.3428	-10.23203	-2.938987	0.0000	I(1)
VTD	-1.472679	-2.936942	0.5370	-6.460439	-2.938987	0.0000	I(1)
CRM	-2.390026	-2.945842	0.1515	-7.494050	-2.938987	0.0000	I(1)
ADR	-1.438660	-2.936942	0.5538	-6.315795	-2.938987	0.0000	I(1)
IRB	-1.628701	-2.938987	0.4587	-8.487015	-2.938987	0.0000	I(1)
MPR	-0.891523	-2.936942	0.7807	-6.781602	-2.938987	0.0000	I(1)

| EXR | -1.541089 | -2.938987 | 0.5026 | -3.022349 | -2.945842 | 0.0004 | I(1) |

Source: *Author's Computation Using EView 10*

ADF test was conducted to check the stationary nature of the variables embraced in the model. In as much as the descriptive statistics affirmed that all the variables are non-stationary at level, the Augment-Test revealed that after the first difference the result was stationary; therefore, it was concluded that the variables were integrated of order one, I (1). This stationarity is critical in that other further analyses are performed to include cointegration and ECM regression.

Cointegration Test

This section presents the results of Johanson co-integration test that were carried out, both Trace and the Maximum Eigenvalue statistics were estimated. The hypothesis is stated as:

H0: no cointegrating equation
H1: H0 is not true.

Table 3. Co-integration Test

Trend assumption: Linear deterministic trend				
Series: LGDP LVTD LCRM LADR LIRB LMPR LEXR				
Lags interval (in first differences): 1 to 1				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.831592	183.8272	125.6154	0.0000
At most 1 *	0.792965	126.8235	95.75366	0.0001
At most 2 *	0.692022	76.42777	69.81889	0.0135
At most 3	0.454550	38.74048	47.85613	0.2707
At most 4	0.302390	19.34385	29.79707	0.4684
At most 5	0.215604	7.820801	15.49471	0.4847
At most 6	0.001557	0.049878	3.841466	0.8233
Trace test indicates 3 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Source: *Author's Computation Using EView 10*

Johansen cointegration tests were performed to assess the long-run equilibrium relationships between the variables. Both the Trace and Maximum Eigenvalue tests indicated the presence of three cointegrating equations at the 5% significance level. This finding suggests that there is a long-term equilibrium relationship between GDP, VTD, CRM, ADR, IRB, MPR, and EXR, implying that these variables move together over time.

Error Correction Model

The model estimates the speed at which a dependent variable Y_t returns to equilibrium after a change in one of the independent variables X_t. In this study, the ECM measures the speed of adjustment in the short-run and long-run equilibrium for GDP in Nigeria given a change in Volume of crypto traded (VTD), Crypto Remittance (CRM), adoption rate (ADR), interbank rate (IRB), monetary policy rate (MPR) and exchange rate (EXR). ECM is estimate as follows:

$$GDP_t = \beta_0 + \beta_1 VTD_t + \beta_2 CRM_t + \beta_3 ADR_t + \beta_4 IRB_t + \beta_5 MPR_t + \beta_6 EXR_t + ECT(-1) + \varepsilon_t$$

Table 4. ECM Regression

ARDL Error Correction Regression				
Dependent Variable: D(GDP)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(VTD)	0.718887	0.161950	4.438936	0.0004
D(CRM)	1.797730	0.529264	3.396660	0.0037
D(ADR)	0.467123	0.186774	2.500998	0.0236
D(IRB)	0.607973	0.232111	2.619321	0.0186
D(MPR)	6.580459	2.060295	3.193940	0.0056
D(EXR)	-9.541419	3.730359	-2.557775	0.0211
ECM(-1)*	-0.642264	0.239857	-3.514505	0.0000
R-squared	0.825164	Mean dependent var		0.006676
Adjusted R-squared	0.764351	S.D. dependent var		0.854304
S.E. of regression	0.414710	Akaike info criterion		1.309785
Sum squared resid	3.955647	Schwarz criterion		1.722024
Log likelihood	-11.95657	Hannan-Quinn criter.		1.446431
Durbin-Watson stat	2.552778			

Source: *Author's Computation Using EView 10*

Volume of Crypto Traded (VTD): The coefficient of VTD is 0.718887, indicating that a one-unit increase in VTD leads to an increase in D(GDP) by 0.718887 units, on average. This coefficient is statistically significant with a t-statistic of 4.439 and a probability value of 0.0004, suggesting that VTD has a significant impact on GDP after controlling for other variables.

Crypto Remittance (CRM): The coefficient of CRM is 1.797730, indicating that a one-unit increase in CRM leads to an increase in D(GDP) by 1.797730 units, on average. This coefficient is statistically significant with a t-statistic of 3.397 and a probability value of 0.0037, suggesting that CRM has a significant impact on GDP after controlling for other variables.

Adoption Rate (ADR): The coefficient of ADR is 0.467123, indicating that a one-unit increase in ADR leads to an increase in D(GDP) by 0.467123 units, on average. This coefficient is statistically significant with a t-statistic of 2.501 and a probability value of 0.0236, suggesting that ADR has a significant impact on GDP after controlling for other variables.

Interbank Rate (IRB): The coefficient of IRB is 0.607973, indicating that a one-unit increase in IRB leads to an increase in D(GDP) by 0.607973 units, on average. This coefficient is statistically significant with a t-statistic of 2.619 and a probability value of

0.0186, suggesting that IRB has a significant impact on GDP after controlling for other variables.

Monetary Policy Rate (MPR): The coefficient of MPR is 6.580459, indicating that a one-unit increase in MPR leads to an increase in D(GDP) by 6.580459 units, on average. This coefficient is statistically significant with a t-statistic of 3.194 and a probability value of 0.0056, suggesting that MPR has a significant impact on GDP after controlling for other variables.

Exchange Rate (EXR): The coefficient of EXR is -9.541419, indicating that a one-unit increase in EXR leads to a decrease in D(GDP) by 9.541419 units, on average. This coefficient is statistically significant with a t-statistic of -2.558 and a probability value of 0.0211, suggesting that EXR has a significant impact on GDP after controlling for other variables.

ECM (-1) (Speed of Adjustment): The coefficient of ECM(-1) is -0.642264, representing the speed of adjustment. This coefficient measures how quickly the system corrects deviations from long-run equilibrium. A one-unit increase in ECM (-1) leads to a decrease in D(GDP) by 0.642264 units, on average. This coefficient is statistically significant with a t-statistic of -3.515 and a probability value of 0.0000, suggesting a significant adjustment process towards long-run equilibrium.

In summary, the ECM regression results indicate that VTD, CRM, ADR, IRB, MPR and EXR, have statistically significant effects on GDP. These findings suggest that these variables play a role in explaining changes in GDP, while controlling for other factors.

Discussion of Findings (Without Figures)

The findings of this study reveal that cryptocurrency-related variables, alongside traditional macroeconomic indicators, significantly influence economic growth in Nigeria. One of the key results shows that the volume of cryptocurrency traded positively affects GDP. This implies that as more individuals and businesses engage in crypto transactions, economic activity is stimulated, potentially due to increased investment, digital entrepreneurship, and wider financial participation. This supports the argument by Acho (2021) that cryptocurrency adoption has opened up alternative financial channels for the unbanked and underbanked populations, enhancing inclusivity and boosting domestic productivity.

Additionally, crypto remittances emerged as a significant driver of economic growth. The study indicates that inflows through crypto-based channels have a positive impact on GDP, reinforcing the growing importance of digital remittances as a complement or even an alternative to traditional financial systems. Ngong (2025) emphasized that cryptocurrency provides a faster and cheaper option for cross-border transfers, especially important in Nigeria, where remittance inflows contribute substantially to household incomes and consumption patterns.

The adoption rate of cryptocurrencies also shows a meaningful positive effect on GDP. This suggests that as more people adopt digital currencies, whether for savings, investment, or daily transactions, economic opportunities expand. This finding aligns with the Innovation Diffusion Theory by Rogers (2003), which stresses the importance of adoption patterns in

shaping the broader societal impact of technological innovations. Olorundare et al. (2023) highlighted that cryptocurrency adoption in Nigeria has empowered many individuals to participate in the digital economy, especially in areas underserved by traditional banking.

Concerning traditional economic variables, both the interbank rate and the monetary policy rate are positively associated with GDP. This may reflect the central bank's role in signaling economic direction and influencing investor behavior. When monetary authorities effectively manage interest rates, they can create a conducive environment for investment and financial market stability, which in turn supports economic growth. Ajibola, Fasina, and Balogun (2024) argued that stable and responsive monetary policy is crucial in fostering innovation in the digital financial space, including cryptocurrencies.

On the contrary, the exchange rate has a negative impact on GDP, indicating that fluctuations in the naira, especially depreciation, can hinder economic performance. This is consistent with the concerns raised by Abu and Ohiaeri (2023), who noted that exchange rate instability, partly fueled by speculative crypto trading, can weaken the real economy by increasing import costs and inflationary pressures.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study set out to examine the relationship between cryptocurrency indicators—namely the volume of crypto traded, crypto remittances, and adoption rate-and economic growth in Nigeria, while also considering traditional macroeconomic factors such as interest rates and exchange rate fluctuations. The findings reveal that cryptocurrency-related activities have a statistically significant and positive influence on GDP. Specifically, increased trading volumes, higher crypto remittance inflows, and rising adoption levels are all associated with improvements in economic performance. These results underscore the growing role of digital financial technologies in driving inclusive growth, creating investment opportunities, and enhancing financial accessibility, particularly for underserved populations. Furthermore, traditional macroeconomic factors such as monetary policy and interbank lending rates also contribute positively to economic output, while exchange rate instability poses a threat to growth.

Recommendations

Based on the findings, the following recommendations are proposed:

1.   Nigeria should come up with legislation that seeks to regulate the features and the dangers that characterize the acceptance of cryptocurrencies. This framework should serve as a guide for regulating the industry to align with the needs of both investors and the market while ensuring consumer protection.

2.   People need more information about cryptocurrencies and their consequences; thus, there should be basic campaigns targeting different population groups, companies, and governments. This will enhance an awareness of these possible benefits and threats so that those stepping into the cryptocurrencies landscape are equipped with the right information and tools to support them to engage in the market responsibly.

3.   In view of the foregoing, Nigeria needs to seek, work and manage risks from adopting cryptocurrencies to reduce the chances of facing a financial crisis. This entails providing oversight and supervision to the use of cryptocurrencies, dealing with money laundering and Compulsive criminality, and encompassing consumer protection standards.

4.   Nigeria should therefore join international regulatory bodies and share on how the country is handling the issue of cryptocurrency and the best practices. Cohesion with other nations or the international bodies is significant in ensuring that Nigeria is in touch with the present world developments and correlating the steps to be taken in formulating cryptocurrency regulation.

5.   The authorities must ensure favourable conditions for further development and investments in the sphere of cryptocurrencies. This entails backing the utilization of blockchain technology and capitalizing on Research and Development to enable the utility of Crypto Currencies for the advancement of prosperity.

6.   Since exchange rate fluctuations have been showed to be detrimental to Nigeria's GDP, it is about time the country adopted measures to curb volatility in the exchange rate. This will enhance exports preservation to ensure that the competitiveness in the international markets is created and sustained for improved economic outcomes.

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