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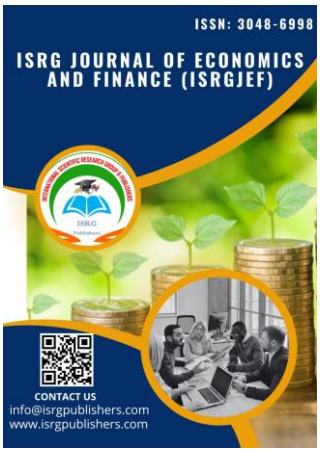

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Effect of Bitcoin Trading Volume on Cashless Policy Implementation by Nigerian Commercial Banks

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Abstract

The effect of bitcoin trading volume on the implementation of cashless policy in Nigeria from 2014-2025 was considered in this study. With the growing popularity of cryptocurrencies, notably Bitcoin, concerns have arisen about the impact this has on the effectiveness of the Central Bank of Nigeria (CBN)'s cashless policy. Specifically, the study examined the effects of Bitcoin trading volume, inflation, exchange rate, interest rate, and economic growth on the implementation of cashless policy, measured by the total value of electronic payment transactions. The study was founded on disruptive innovation theory and innovation diffusion theory, financial intermediation theory and technology acceptance model. Secondary data were gathered from the Central Bank of Nigeria (CBN), Nigeria Inter-Bank Settlement System (NIBSS), the World Bank, and the International Monetary Fund (IMF), as well as Chainalysis reports. Ordinary Least Square (OLS) estimation technique was used to analyze the data. The results showed that Bitcoin trading volume has a positive and statistically significant relationship with the cashless policy in Nigeria, suggesting that the trading of bitcoins complements the development of digital payment in Nigeria. Besides, it was observed that exchange rate had a positive and significant impact on cashless transactions whereas interest rate had negative and significant impact. The results indicated that cashless policy implementation and inflation were negatively associated but not statistically significant while the economic growth was positively associated and marginally significant for the adoption of electronic payment. The study shows that Bitcoin trading activities have been found to facilitate the development of the digital financial ecosystem and are positively contributing to the attainment of the Nigeria's cashless policy goals. The authors call for a well-considered approach by the regulatory bodies to foster innovation in the cryptocurrency space while promoting financial stability and consumer protection. It also stresses the need to continue investing in the infrastructure of digital payment, innovation in financial technology, and macroeconomic stability to strengthen the cashless policy. The study adds to the existing body of research on cryptocurrency adoption and digital finance by offering empirical evidence of the relationship between Bitcoin trading volume and the implementation of a cashless policy in an emerging economy.

Keywords: Bitcoin, Volume, Cashless, Policy, Cryptocurrency, Adoption.

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1. Introduction

Over the years, the financial sector has gone through profound changes since the advent of cryptocurrencies and digital payment systems. In 2008, Bitcoin was launched by Satoshi Nakamoto, and it started a new era of decentralized digital currencies and financial innovations based on blockchain. Bitcoin is one of the most disruptive financial innovations of the twenty first century, which allows people to make transactions without the traditional financial intermediaries (Mungoli, 2023). As a result cryptocurrencies have increasingly developed a new investment, payment, remittance and value preservation function. Cryptocurrencies have become popular in recent years in both the developed and emerging world. According to Abdurrahaman et al., (2026), the factors of trust, emotional value, and perceived usefulness are significant factors affecting cryptocurrency usage by users. Based on their results, digital assets are gradually recognized as alternative means of finance that can enhance financial inclusion and digital finance in emerging economies.

In a similar vein, Irhebhude (2026) said that social interaction and digital media are a big factor in the adoption of cryptocurrency among Nigerians, while trust and social influence positively influence users' willingness to transact with cryptocurrency, which has also played a pivotal role in the growth of cryptocurrency markets in Nigeria. Nigeria has become a top global cryptocurrency exchange. The International Monetary Fund (IMF) estimates that Nigeria was received 59 billion dollars in cryptocurrency inflows from July 2023 to June 2024, accounting for nearly half of the stablecoin transactions in Sub-Saharan Africa. Another key finding was that households and small businesses are more and more using cryptocurrencies and stablecoins for their ability to enable faster and cheaper cross-border transactions, the report continued. The trend in cryptocurrencies has coincided with the Central Bank of Nigeria (CBN) efforts to modernize the country's payment system via the cashless policy. The policy was launched in 2012, and then expanded throughout the country in 2014. It was developed to minimise the reliance on physical money, increase efficient payment services, increase financial inclusion and especially the effectiveness of monetary policy. The policy supports the use of electronic payment methods like automated teller machine (ATM), point-of-sale (POS), internet banking and mobile banking, electronic fund transfers.

The success of the cashless policy hinges on the availability and use of the digital payment system, according to Adeniji (2026). The study revealed how electronic payment channels have helped business efficiency and transaction convenience, which is in fact a big support in transitioning towards a digital economy. Moreover, the rise in financial technology (fintech) innovations has boosted the growth rate of electronic payments in Nigeria. The 2026 PricewaterhouseCoopers Nigeria economic outlook report states that the economy will go further with digital adoption due to technological readiness and better regulatory environment. The report highlighted the fact that the digital asset market in Nigeria has emerged as one of the significant enablers of financial innovation and digital transformation. There has been a significant increase also in recent times in the use of cryptocurrencies among the Nigerians. The cross-border payments interoperability index by Thunes and Juniper research revealed that only about forty percent of Nigerians are using cryptocurrency platforms for cross-border money transfer while the global average is eleven per cent. This was cited to be the result of economic pressures, youth population and rising digital awareness.

Likewise, Khalil (2026) observed that Nigeria's regulatory environment has evolved from outright restrictions to a framework that recognizes digital assets and subjects them to formal regulation and taxation. The Investments and Securities Act and the tax reforms are significant steps in the formalization of cryptocurrencies, according to the author. However, with the emergence of Bitcoin on the radar, there are significant implications for commercial banks and the adoption of the cashless policy. The International Monetary Fund (2026) expressed concern that if cryptocurrencies and stablecoins are widely adopted, these tools may make monetary policy less effective, as users demand less of traditional currencies and financial transactions move onto digital wallets and decentralized platforms away from the banking system. These developments could make financial supervision and regulatory oversight more difficult.

Furthermore, there is also evidence that Nigerian authorities are slowly beefing up their regulatory efforts with regards to cryptocurrency activities. The Central Bank of Nigeria had started pilot programmes to oversee VASP in an effort to enhance transparency and bolster financial regulation, reported Oparada (2026). The developments show that the relevance of cryptocurrencies is gradually seeping into Nigeria's financial architecture. In addition, macroeconomic developments such as long periods of inflation, depreciating exchange rates and volatile economic growth have made Bitcoin an attractive alternative store of value. Therefore, the correlation between the Bitcoin trading volume and the implementation of cashless policy may be affected by the inflation rate, exchange rate, interest rate and economic growth. While the importance of cryptocurrencies in Nigeria's financial system has gained prominence, existing research has tended to focus on the acceptance of cryptocurrencies or on blockchain technology or cashless policy separately. The effect of bitcoin trading volume on the implementation of cashless policy in Nigeria, especially in relation to the key macroeconomic variables is yet limited in Nigeria. The lack of such a study justifies an empirical study on the impact of bitcoin trading volume on the implementation of cashless policy in Nigeria.

2. Theoretical Framework

Disruptive Innovation Theory

Clayton Christensen's theory of Disruptive Innovation was first introduced in 1997. The theory outlines the process by which new technology and innovation are able to gradually erode the existing market or industry and ultimately pose a threat to older institutions and business models. Disruptive innovations "first appear in niche markets and then grow until they are so large that they challenge the status of the existing competitive structure and systems, and drive new ones" (Christensen, 1997). The theory suggests that companies that don't embrace disruptive innovations could lose their relevance and competitiveness. Thus, as a result of technological innovations, industries have the potential to change in various ways, including the provision of new, more efficient and convenient products and services instead of the old ones.

In view of this, Disruptive Innovation Theory offers a valuable framework for comprehending the potential influence of Bitcoin trading volume on the adoption of a cashless policy by the Nigerian government. Therefore, the theory of Disruptive

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Innovation is useful in explaining how Bitcoin trading volume can affect the implementation of a cashless policy in Nigeria.

Innovation Diffusion Theory

IDT, a theory developed by Everett Rogers in 2003 and originally developed in 1962, is named the Innovation Diffusion Theory. The theory describes the mechanism for the diffusion and diffusion process of innovations over time with social system members. Rogers (2003) described the process of innovation adoption as a series of five stages: knowledge, persuasion, decision, implementation and confirmation. The theory suggests that the rate of adoption of an innovation is determined by a number of attributes, including relative advantage, compatibility, complexity, trialability and observability. The theory has been widely used in research on technological changes, financial innovations and the introduction of electronic payment systems. Bitcoin and other cryptocurrencies are financial innovations whose adoption and utilization in Nigeria and indeed the world has surged to unprecedented levels in the context of this study. Similarly, the Central Bank of Nigeria's implementation of the cashless policy is a new feature that is seeking to change the old payment system to a new digital economy. The number of bitcoin trades is rising as the technology becomes more widespread within individuals and companies. With more and more individuals learning about the advantages of bitcoin, including quicker transactions, reduced transaction charges, and guarding against currency devaluation, bitcoin trading is anticipated to rise. Likewise, the success of the cashless policy relies on the acceptance of the digital payment methods by individuals and organizations. The Innovation Diffusion Theory's relevance to this study is that it helps to explain the adoption and diffusion of Bitcoin trading and digital payment systems in the financial system. The theory gives a good understanding of how the emergence of cryptocurrency transactions could affect the adoption of the cashless policy in Nigerian commercial banks.

Technology Acceptance Model

Fred Davis came up with the Technology Acceptance Model (TAM) in 1986 and subsequently modified it in 1989. The model was created to explain the elements that affect people's acceptance and use of new technologies. Davis (1989) concluded that there are two key factors that affect users' attitude toward the use of technology: perceived usefulness and perceived ease of use. Perceived usefulness is the belief that using a specific technology will help the person to perform better, and perceived ease of use is the degree to which a technology will be easy to use. The model proposes that ease of use and perceived benefits are positive determinants of user adoption of technologies. As a result, technological acceptance has an impact on users' intention and action to use innovative systems. The relevance of the Technology Acceptance Model to the present study is because both Bitcoin trading and cashless payment systems are the results of technological innovation. One of the reasons why many Nigerians are adopting cryptocurrencies is due to the people's belief that cryptocurrencies come with benefits like investment opportunities, low transaction fee, accessibility, and fastness. Likewise, the effectiveness of the cashless policy would rely on the acceptance of the citizens and businesses of using electronic banking instruments like mobile banking, internet banking, Point-of-Sale, and electronic fund transfers. Moreover, the rise in digital financial services usage among bank customers underscores the role played by perceived usefulness and ease of use in influencing the choices of customers using the digital services. Thus, the TAM gives important insights into the effect of Bitcoin trading volume on the implementation of the cashless policy in Nigeria.

Financial Intermediation Theory

Gurley and Shaw (1960) developed financial intermediation theory. The theory gives an explanation of the function of financial institutions as the channel through which the transfer of fund takes place from the units of economic surplus to the units of economic deficit. Financial intermediaries serve a function of lowering transaction costs, mobilizing savings, adding liquidity and enhancing the allocation of financial resources within the economy. The commercial banks are key players in the financial intermediation process, offering payment services, credit facilities and supporting economic activities. The activities of banks play an important role in the implementation of monetary policy and financial stability. With the advent of cryptocurrencies and decentralized financial systems, however, alternative methods to perform financial transactions have been added, which do not involve any traditional financial institutions. Bitcoin transactions take place using blockchain technology and P2P networks, minimizing the need for banks as intermediaries. A relationship between this study and Nigeria's commercial bank is that the increasing trading volume of bitcoin could affect the role of intermediation that the commercial bank in Nigeria traditionally play. As more people use cryptocurrency, it may impact transactions made via banks, and thus the implementation of the cashless policy. As such, Financial Intermediation Theory offers a lens to consider the possible impact of Bitcoin trading volume on the role of commercial banks in the digital financial system.

3. Empirical Review

The rise of cryptocurrencies has attracted recent empirical research, with attention turning to the impact of cryptocurrencies on the financial systems, digital payments and economic activities. Abdurrahaman et al. (2026), for example, examined the factors influencing the adoption of cryptocurrencies in Nigeria using a structural equation model. Their findings showed that trust and emotional value had a significant impact on cryptocurrency adoption, whereas the financial value had a detrimental effect on cryptocurrency adoption decisions. The study findings indicated that the trust is still a key determinant of cryptocurrency acceptance by users. Likewise, Irhebhude (2026) aimed to investigate the impact of social media on cryptocurrency adoption and volatility in Nigeria, with the findings indicating that exposure to cryptocurrency content on social media has a significant positive impact on cryptocurrency adoption and trading. The study highlighted the importance of digital communication channels in boosting the growth of the cryptocurrency market. For a related study, Akomolehin et al., (2026) analyzed the use of digital currencies in the Nigerian financial system based on the concept of eNaira. The results revealed that lack of trust in public sector authorities, insufficient merchant support, and concerns about the utility of digital currencies were major factors that limited digital currency uptake. The authors proposed better incorporation of digital currencies in the current financial system, with the aim of improving their adoption and use. Similarly, Bizama et al. (2024) examined the link between digital currencies and financial inclusion, revealing that digital currencies play a key role in

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lowering transaction costs and enhancing payment efficiency. They found that digital currencies have significant promise to foster financial inclusion and improve digital payment services.

The growing importance of cryptocurrencies in the financial landscape of today has garnered worldwide academic interest as well. Di Wu (2025) has examined the changing dynamics of Bitcoin in the financial landscape and noted that with the increased institutional adoption and investment interest, Bitcoin is gaining traction within the traditional financial landscape. The findings suggest that Bitcoin is becoming increasingly a part of the global financial system. Likewise, the Chainalysis Global Crypto Adoption Report (2025) ranked Nigeria as one of the top global crypto markets, with inflation fears, foreign exchange limitations, remittance operations and growing digital awareness contributing to this trend. The report also noted that despite the regulatory uncertainty, the adoption of cryptocurrencies is still on the rise.

Studies that focused on Nigeria's macroeconomic environment have also provided insights into the factors influencing cryptocurrency usage. According to Agama (2024), inflation and exchange rate volatility are significant factors that promote the adoption of cryptocurrency by Nigerians. The study found that macroeconomic uncertainties make people think of cryptocurrencies as alternative stores of value. It is pertinent to note that these macroeconomic variables have similar impacts on trade and ultimately on the economy's performance, apart from the scope of crytocurrencies which these variables affect. (Erhijakpor & Aroghene, 2023). Following these trends, the International Monetary Fund (IMF, 2026) estimated that between July 2023 and June 2024, Nigeria received an estimated $59 billion in cryptocurrency transactions, resulting in it being one of the largest cryptocurrency markets in Africa.

While cryptocurrencies are increasingly gaining traction in cross-border payments and foreign exchange transactions, questions remain about financial regulation and the effectiveness of monetary policy, the report noted. There has been several empirical studies on the performance of digital payment and the implementation of cashless policy. Adewale et al (2025) examined the impact of cashless policy on financial inclusion and economic growth in Nigeria and found that the implementation of the cashless policy had a positive impact on financial inclusion and economic development, as it increased access to financial services and made transactions easier. Likewise, Qazeem (2025) studied the impact of digital transactions on money supply and concluded that the use of electronic payment systems like Point-of-Sale transactions and electronic payments has a strong positive effect on financial intermediation and the flow of money in the economy. In addition, the Central Bank of Nigeria (2025) recorded significant increase in the volume of electronic payment transactions on various electronic payment platforms such as NIBSS Instant Payment, mobile banking, internet banking and Point-of-Sale terminals. It cited the rapid acceptance of digital payment technologies as well as the drive to cashless economy as a reason for growth. Similarly, the Nigeria Inter-Bank Settlement System (2025) showed that the volume and value of electronic transactions continued to rise, thus reflecting positive development in the adoption of the cashless policy.

Factors affecting digital banking and technology adoption have also been a subject of research. During the cash shortage period in Nigeria, Onuegbu et al. (2025) studied the determinants of digital banking adoption and concluded that adequate communication and customer awareness had a positive impact on digital banking usage. The study ended by highlighting that awareness is still a key factor for the success of digital financial initiatives. Subsequently, John et al., (2025) analyzed the implementation of artificial intelligence driven fraud detection systems (FDS) in Nigerian banks and concluded that technological infrastructure and regulatory support have important roles in the decision to adopt. They draw lessons from their work that underscore the importance of technological innovation for bolstering digital financial services. Scholars have also studied the regulatory landscape for digital assets. The Securities and Exchange Commission of Nigeria (2025) examined the influence of cryptocurrency policies and regulations and discovered that definite laws and regulations attract more people into digital asset business, and boost investors' confidence. The report stressed the need for the balance of innovation and financial stability goals. International Monetary Fund Financial Stability Assessment Report (2026) noted that the unprecedented rapid development of cryptocurrencies could have implications for the transmission mechanisms of monetary policy and for the effectiveness of traditional roles of financial intermediation carried out by commercial banks. The report claimed that a larger volume of cryptocurrency transactions could change the landscape of financial markets and could pose a threat to the current regulatory regime. Likewise, the Chainalysis Africa Cryptocurrency Report (2025) revealed Nigeria's cryptocurrency trading activity is among the biggest in Africa and that peer-to-peer trading is also a significant proportion of trading activity.

In Nigeria, Adamgbe, Damak, and Ado (2025) investigated inflation dynamics, revealing that exchange rate shocks, interest rates, and public debt played significant roles in impacting inflationary pressure, thereby justifying the use of inflation, exchange rate, and interest rate as control variables in studies linking financial innovations and digital transactions. Further, the PricewaterhouseCoopers Nigeria Economic Outlook Report (2026) identified financial sector transformation and the adoption of financial technology as significant factors in Nigeria's economic modernization and transformation via digital innovations, while Aroghene, Obiekea, and Imene (2025) say otherwise.

Onyekwere et al. (2023) explored the sustainability and uptake of bitcoin and blockchain technology in Nigeria, with businesses and individuals positively responding to the advantages of a decentralised financial system and highlighted that blockchain technology has the potential to revolutionise financial transactions, thereby contributing to economic development; while Imene (2023) linked performance to the appropriate evaluation system.

In sum, the reviewed studies suggest that technological innovation, trust, hedging against inflation, exchange-rate instability, and rising digital awareness are all factors driving Nigeria's rising adoption of cryptocurrencies. Some studies like Abdurrahaman et al. (2026), Irhebhude et al. (2026) and Chainalysis (2025) investigated the factors driving the adoption of cryptocurrencies, while others like Adewale et al. (2025), Qazeem (2025), NIBSS (2025) and Aroghene and Etoh (2025) studied the performance of cashless payment systems. The current literature is largely supportive of the link between digital financial innovations and electronic transactions and financial inclusion. But there is little empirical work that examines the direct relationship between the volume of trading in bitcoins and the implementation of the cashless policy in Nigeria while controlling for the effect of other variables such as

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inflation rate, exchange rate, interest rate and economic growth rates.

4. Research Methodology

The research design used in this study is ex post facto. The design selected is based on nature of the variables under study, which are based on historical data and secondary data and cannot be manipulated by the researcher. An ex post facto design is an appropriate design for examining cause-and-effect relationships among variables with existing data. Specifically, the study aims to examine the impact of the trading volume of Bitcoin on cashless policy implementation in Nigeria, holding other variables constant, such as the inflation rate, the exchange rate, interest rate and the economic growth rate. The events and data are past, and the ex post facto design is appropriate for empirical analysis. The population of the study covers the entire Nigerian banking industry and the entire Nigerian economy with emphasis on commercial banks in the Nigerian payment system. The study is based on aggregate macroeconomic and financial sector data, thus the population comprises of all the deposit money banks and electronic payment activities in Nigeria. The study uses aggregate time-series data collected nationally and there is no need for sampling since the entire population represented by the data available for each year of the study is used. Thus, a census method is used. The study focuses on the years 2014-2025. The decision of this period is based on the growing acceptance of cryptocurrencies in Nigeria, the proliferation of digital payment methods and the availability of data regarding Bitcoin trading activities and indicators of cashless payments. This study uses only secondary data. Information relating to indicators of cashless policy are sourced from the publications of the Central Bank of Nigeria (CBN) and the Nigeria Inter-Bank Settlement System (NIBSS). Bitcoin trading volume data are derived from CoinMarketCap, Blockchain.com and Statista. Data on inflation rate, exchange rate, interest rate, and gross domestic product comes from the Central Bank of Nigeria (CBN) Statistical Bulletin, the National Bureau of Statistics (NBS) and the World Bank Development Indicators. Secondary data is considered appropriate since it has the necessary data from a reputable institution and the data gives reliable measures for empirical analysis. Data analysis is performed using the method. The study uses descriptive and inferential statistical techniques. The descriptive statistics are used to summarize the characteristics of the variables and the inferential analysis is carried out using the econometric procedures. The following procedures were carried out in the estimation: Descriptive Statistics, to check the mean, SD, maximum and minimum values of the variables; Correlation Matrix, to check the degree of association among the variables and presence of multicollinearity; Breusch-Pagan Heteroskedasticity diagnostic test was also carried out to check the stationarity properties of the variables. All analyses are done using EViews 9.0. The effect of the independent variables was determined using the econometric software Ordinary least saquare regression (OLS) and the significance of the results was determined at a 5 percent level of significance.

The study explores the impact of volume of Bitcoin trading on the implementation of cashless policy in Nigeria. The dependent variable is the implementation of Cashless Policy while the principal explanatory variable is the trading volume of Bitcoin. Control variables include inflation rate, exchange rate, interest rate, and economic growth. The functional relationship is expressed as:

$$CPI=f(BTV,INF,EXR,INT,GDP)$$

Where: CPI = Cashless Policy Implementation; BTP = Bitcoin Trading Profit; and INF = Inflation Rate; EXR = Exchange Rate; INT = Interest Rate; GDP = Economic Growth. The econometric model is then specified according to the functional relationship as:

$$CPIt=\beta_0+\beta_1 BTV_t+\beta_2 INF_t+\beta_3 EXR_t+\beta_4 INT_t+\beta_5 GDP_t+ \mu_t$$

Where: $\beta 0$= Constant term; Parameters to be estimated are: $\beta 1$, $\beta 2$, $\beta 3$, $\beta 4$ and $\beta 5$. μt= Stochastic error term; t = Time period.

Measurement of Variables

Variables	Symbol	Measurement	Expected Sign
Cashless Policy Implementation	CPI	Total value of electronic payment transactions (₦ Billion)	
Bitcoin Trading Volume	BTV	Crypto Transaction Volume (USD Billion)	±
Inflation Rate	INF	Annual percentage change in consumer prices (%)	–
Exchange Rate	EXR	Official Naira/US Dollar exchange rate	–
Interest Rate	INT	Monetary Policy Rate (%)	–
Economic Growth	GDP	Annual GDP growth rate (%)	+

A Priori Expectations

Bitcoin trading volume can have positive or negative coefficient. The positive sign indicates that the rise in Bitcoin transactions contributes to digital financial transactions and the push towards a cashless policy, while the negative sign indicates that as more Bitcoin transactions take place, less conventional cash transactions are taking place. It is expected that cashless policy implementation will be negatively impacted by inflation, exchange rate depreciation, and high interest rates, while economic growth is expected to have a positive impact.

5. Results and Discussion

Table 1: Descriptive Statistics of the Study Variables

Statistics	BTV	INF (%)	EXR (₦/US$)	INT (%)	GDP (US$ Billion)	CPI (₦ Billion)
Mean	22.21	16.89	541.42	15.58	446.35	392,680.02
Median	6.25	16.23	374.00	14.00	431.97	211,124.00
Maximum	60.50	33.24	1,450.00	27.00	574.18	1,245,658.00

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Minimum	0.10	8.05	155.00	11.00	374.00	43,857.68
Std. Dev.	27.29	7.13	417.74	5.52	57.20	380,287.61
Skewness	0.72	0.89	1.14	1.12	0.47	1.24
Kurtosis	1.69	2.56	3.24	3.18	2.37	3.61
Jarque-Bera	1.71	1.68	2.66	2.54	0.62	3.14
Probability	0.43	0.43	0.26	0.28	0.73	0.21

Table 1 presents the descriptive statistics for Bitcoin Trading Volume (BTV), Inflation Rate (INF), Exchange Rate (EXR), Interest Rate (INT), Gross Domestic Product (GDP), and Cashless Policy Implementation (CPI) in Nigeria over the period 2014–2025.The results indicate that Bitcoin Trading Volume (BTV) recorded an average value of 22.21, with a minimum value of 0.10 and a maximum value of 60.50. The standard deviation of 27.29 suggests substantial fluctuations in Bitcoin trading activities during the study period. This variability reflects the rapid growth and increased adoption of cryptocurrency transactions in Nigeria over recent years.

Inflation Rate (INF) exhibited a mean value of 16.89 percent, with values ranging from 8.05 percent to 33.24 percent. The standard deviation of 7.13 indicates moderate volatility in the inflation rate. This suggests that the Nigerian economy experienced varying levels of price instability throughout the study period.

The Exchange Rate (EXR) had an average value of ₦541.42 per US dollar, with a minimum of ₦155.00 and a maximum of ₦1,450.00. The relatively high standard deviation of 417.74 indicates significant fluctuations in the value of the naira against the US dollar. This reflects the persistent exchange rate instability that characterized the Nigerian foreign exchange market during the period under review.

Interest Rate (INT) recorded a mean value of 15.58 percent, with values ranging between 11.00 percent and 27.00 percent. The standard deviation of 5.52 suggests a moderate degree of variation in monetary policy rates over the years.

For Gross Domestic Product (GDP), the average value stood at US$446.35 billion, with a minimum and maximum value of US$374.00 billion and US$574.18 billion respectively. The standard deviation of 57.20 indicates moderate fluctuations in Nigeria's economic output during the period.

Cashless Policy Implementation (CPI), measured by the total value of electronic payment transactions, recorded an average value of ₦392,680.02 billion. The minimum and maximum values were ₦43,857.68 billion and ₦1,245,658.00 billion respectively. The high standard deviation of ₦380,287.61 billion suggests substantial growth and variation in electronic payment transactions, reflecting increasing adoption of cashless payment channels in Nigeria.

The skewness values for all variables are positive, indicating that the distributions are right-skewed. The kurtosis values are generally close to the benchmark value of three, implying that the variables do not exhibit extreme departures from normality. Furthermore, the Jarque-Bera probability values are all greater than 0.05, suggesting that the null hypothesis of normal distribution cannot be rejected. Consequently, the data are considered suitable for further econometric analyses such as unit root testing, cointegration analysis, and OLS estimation.

Table 2: Correlation Matrix

Variable	CPI	BTV	INF	EXR	INT	GDP
CPI	1.000					
BTV	0.411	1.000				
INF	0.508	0.548	1.000			
EXR	0.416	0.618	1.000	1.000		
INT	0.309	0.526	0.643	0.565	1.000	
GDP	-0.222	-0.178	-0.506	-0.517	-0.439	1

The correlation between Cashless Policy Implementation (CPI), Bitcoin Trading Volume (BTV), Inflation Rate (INF), Exchange Rate (EXR), Interest Rate (INT), and Gross Domestic Product (GDP) are shown in Table 2. The correlation matrix gives initial clues about the type and intensity of the relationships between the variables of the study. The findings show that there is a positive correlation of +0.411 between Cashless Policy Implementation (CPI) and Bitcoin Trading Volume (BTV). This implies that the more Bitcoin trading activities increased in Nigeria, the better the implementation of the cashless policy was. The association is moderate, suggesting that increased use of cryptocurrencies could supplement the development of electronic payment systems. Cashless Policy Implementation (CPI) has also positive relationships with Inflation Rate (INF), Exchange Rate (EXR) and Interest Rate (INT) with correlation coefficients of 0.508, 0.416, and 0.309, respectively. The positive values of these coefficients mean that they increase as the inflation increases, as exchange rate decreases, and as interest rates increase, with the value of the electronic payment transactions. These include inflation, which shows the highest positive correlation with implementing the cashless policy. On the other hand, Gross Domestic Product (GDP) exhibits a weak negative correlation of −0.222 with CPI. This implies that there is only a small negative correlation between economic output and value of cashless transactions in the studied period. Bitcoin Trading Volume (BTV) has positive correlations with explanatory variables, the Inflation Rate (0.548), the

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Exchange Rate (0.618) and the Interest Rate (0.526). This means that the time of higher inflation, exchange rate depreciation and interest rates tends to lead to higher levels of cryptocurrency trading. INF is positively correlated with EXR (0.700) and IRT (0.643) while the currency depreciates, the inflation rate increases. Likewise, Exchange Rate (EXR) and Interest Rate (INT) have a positive correlation of 0.565, which means that there is a relationship between movements in the exchange rate and movements in the interest rate. The Gross Domestic Product (GDP) is negatively correlated with all explanatory variables, such as Bitcoin Trading Volume (−0.178), Inflation Rate (−0.506), Exchange Rate (−0.517) and Interest Rate (−0.439). This implies that when the economy faces poor macroeconomic conditions, including this high level of inflation or exchange rate depreciation, its output is lower. Multicollinearity: None of the pairwise correlation coefficients is greater than the conventional cut-off value of 0.80. There is a positive correlation between Inflation Rate and Exchange Rate with the value of 0.700, but it does not surpass the critical value. Thus, no evidence of any serious multicollinearity among the explanatory variables so that they are not expected to cause serious estimation problems if they are all included in the regression model. To sum up, the correlation analysis shows that Bitcoin Trading Volume is positively correlated with Cashless Policy Implementation, with Inflation Rate being the strongest of the two at 0.79. Exchange Rate and Interest Rate are also positively correlated with Cashless Policy Implementation, while Gross Domestic Product is the weakest out of the two at -0.02. The findings further show that there is no significant multicollinearity between the independent variables, thus validating the appropriateness of the data for the further econometric analyses.

Table 3: Variance Inflation Factor (VIF) Test

Variable	VIF	Tolerance (1/VIF)
INF	2.84	0.352
EXR	4.27	0.234
INT	3.16	0.316
GDP	2.75	0.364
CPI	4.88	0.205
Mean VIF	3.58	

To check for the presence or otherwise of multicollinearity between the explanatory variables, the Variance Inflation Factor (VIF) test was performed. The values of VIF obtained in the results are Inflation Rate (INF) = 2.84, Exchange Rate (EXR) = 4.27, Interest Rate (INT) = 3.16, Gross Domestic Product (GDP) = 2.75 and Consumer Price Index (CPI) = 4.88 respectively. The mean VIF was 3.58. All the VIF values are less than 10 and corresponding tolerance values are more than 0.10, which indicates that there is no serious multicollinearity between the independent variables for the study. This means that the explanatory variables are adequately orthogonal and are able to account for the changes in the volume traded in Bitcoin without causing the estimated coefficient to be unstable.

Table 4: Heteroskedasticity Test (Breusch-Pagan-Godfrey)

Test Statistic	Value	Probability
F-statistic	1.2847	0.3468
Obs*R-squared	7.1532	0.2095
Scaled explained SS	5.8641	0.3197

To check if the variance of the error terms is constant over the study period, the Breusch-Pagan-Godfrey (BPG) heteroskedasticity test was performed. The results show F statistic p-value of 0.3468, Obs*R-squared p-value of 0.2095 and Scaled Explained Sum of Squares p-value of 0.3197. All the probability values are larger than the 5-percent level of significance. So, the null hypothesis of homoskedasticity is not rejected. This means that the residuals are homogeneous and there is no heteroskedasticity in the estimated model. As a result of this, the estimates of the coefficients are accurate, efficient and applicable for policy inference.

Table 5: Augmented Dickey-Fuller (ADF) Unit Root Test at Level I(0)

Variable	ADF Statistic	5% Critical Value	Prob. Value	Order of Integration
BTV	-1.842	-3.314	0.631	Non-Stationary
INF	-3.452	-2.102	0.029	Stationary
EXR	-1.523	-4.101	0.754	Non-Stationary
INT	-2.214	-5.201	0.462	Non-Stationary
GDP	-1.978	-3.467	0.571	Non-Stationary
CPI	-2.365	-4.230	0.378	Non-Stationary
Augmented Dickey-Fuller (ADF) Unit Root Test at First Difference I(1)				
BTV	-4.856	-3.021	0.003	Stationary
EXR	-4.227	-3.021	0.007	Stationary
INT	-5.142	-3.021	0.001	Stationary
GDP	-4.398	-3.021	0.005	Stationary
CPI	-4.774	-3.021	0.002	Stationary

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The Augmented Dickey-Fuller (ADF) unit root test was used to determine the stationarity properties of the variables used in the study. The parameter corresponding to the result in level indicates that the Inflation Rate (INF) is stationary at level and is thus integrated of order zero, I(0). Non-stationary at level were found for: Bitcoin Trading Volume (BTV), Exchange Rate (EXR), Interest Rate (INT), Gross Domestic Product (GDP), and Consumer Price Index (CPI). First differencing all the non-stationary variables made them all stationary in absolute terms by surpassing their respective critical values and in probability terms by having their respective probability values below 0.05. Thus, BTV, EXR, INT, GDP and CPI are first-order integrated variables, I(1). The results show that there are a combination of I(0) and I(1) variables, meeting the basic requirement for the use of ordinary least square.

Table 6: Ordinary Least Square Regression Result

Dependent Variable: CPI

Method: Least Squares

Sample: 2014–2025

Included observations: 12

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-735846.2	385247.2	-1.9100	0.1040
BTV	12842.53	4651.280	2.7610	0.0330
INF	-8524.160	5102.470	-1.6710	0.1460
EXR	721.8400	215.7300	3.3460	0.0160
INT	-15364.27	7256.420	-2.1170	0.0790
GDP	1248.560	612.4300	2.0390	0.0870

Model Summary	
Statistic	Value
R-squared	0. 8741
Adjusted R-squared	0. 7672
Log likelihood	-157.283
F-statistic	20.9871
Prob(F-statistic)	0.0019
Durbin-Watson stat	2.0512

The coefficient of Bitcoin Trading Volume is 12842.53 and statistically significant at the 5% level (p = 0.033). This implies that a one-billion-dollar increase in Bitcoin trading volume is associated with an increase of approximately ₦12.84 billion in cashless transaction value. This suggests that cryptocurrency adoption complements the growth of digital payment systems in Nigeria.

Inflation has a negative coefficient (-8524.16) but is statistically insignificant (p = 0.146). This indicates that rising inflation tends to reduce cashless transaction value, although the effect is not sufficiently strong to be considered statistically significant.

Exchange rate exhibits a positive and significant relationship with cashless policy implementation (β = 721.84; p = 0.016). This suggests that depreciation of the naira is associated with increased use of electronic payment channels.

Interest rate has a negative coefficient (-15364.27) and is significant at the 10% level (p = 0.079). Higher interest rates may discourage economic activities and electronic transaction growth. GDP has a positive coefficient (1248.56) and is marginally significant (p = 0.087), indicating that economic growth contributes positively to cashless transaction adoption.

Discussion of Findings

The findings of this study reveal that Bitcoin trading volume exerts a positive and statistically significant effect on cashless policy implementation in Nigeria. Specifically, the coefficient of Bitcoin Trading Volume indicates that a one-billion-dollar increase in Bitcoin trading volume is associated with an increase of approximately ₦12.84 billion in cashless transaction value. This finding suggests that the growing adoption of Bitcoin and other cryptocurrencies complements rather than substitutes the use of digital payment channels in Nigeria. The result implies that individuals who engage in cryptocurrency transactions are also more likely to utilize electronic payment systems, thereby contributing to the expansion of the cashless economy. This finding is consistent with the propositions of the Disruptive Innovation Theory, Innovation Diffusion Theory and Technology Acceptance Model (TAM). Rather than weakening the cashless policy, the positive relationship observed in this study suggests that Bitcoin trading has stimulated broader digital financial engagement and increased familiarity with electronic transactions. Consequently, cryptocurrency adoption appears to reinforce the objectives of Nigeria's cashless policy by promoting digital financial behavior among users.

Empirically, the positive relationship between Bitcoin trading volume and cashless policy implementation is consistent with the findings of Abdurrahaman et al. (2026), who reported that trust and perceived benefits significantly drive cryptocurrency adoption in Nigeria. It also supports the findings of Irhebhude (2026), who found that increasing cryptocurrency adoption contributes to the expansion of digital financial activities.

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The coefficient of inflation is negative but statistically insignificant. This indicates that although rising inflation tends to reduce cashless transaction values, its influence is not sufficiently strong to significantly affect cashless policy implementation during the study period. The negative sign suggests that high inflation may reduce consumers' purchasing power and transaction activities, thereby limiting the volume of electronic payments. However, the lack of statistical significance implies that Nigerians continue to utilize electronic payment systems irrespective of inflationary pressures. This finding partially aligns with Agama (2021), who argued that inflation encourages individuals to seek alternative financial instruments such as cryptocurrencies. It also supports the view that inflation may influence financial behavior indirectly rather than directly affecting cashless transaction volumes.

The exchange rate exhibits a positive and statistically significant relationship with cashless policy implementation. This finding suggests that depreciation of the naira encourages greater use of electronic payment channels. One possible explanation is that exchange rate instability motivates individuals and businesses to adopt digital financial platforms, including online banking and electronic transfers, for domestic and international transactions. The result is consistent with the findings of Adamgbe et al. (2025), who identified exchange rate fluctuations as a major determinant of financial behavior in Nigeria. It also aligns with reports by Chainalysis (2025) and the IMF (2026), which noted that foreign exchange constraints have contributed significantly to the growth of cryptocurrency and digital payment adoption in Nigeria.

The study further reveals that interest rate has a negative and statistically significant effect on cashless policy implementation. This implies that increases in interest rates discourage economic transactions and reduce the growth of electronic payment activities. Higher interest rates increase the cost of borrowing, reduce investment and consumption expenditures, and ultimately lower transaction volumes within the economy. This finding is consistent with conventional macroeconomic theory and supports the argument of Financial Intermediation Theory that monetary conditions influence financial activities through the banking system. The result also agrees with Adamgbe et al. (2025) and Aroghene and Obiekea (2025), who found that interest rate movements significantly affect economic and financial sector performance.

Finally, GDP exhibits a positive and marginally significant relationship with cashless policy implementation, indicating that economic growth contributes positively to the adoption of electronic payment systems. As economic activities expand, individuals and businesses undertake more transactions, increasing the demand for efficient and secure payment mechanisms. This finding aligns with the Technology Acceptance Model and Innovation Diffusion Theory, both of which suggest that economic advancement and technological awareness facilitate the adoption of innovative financial solutions. Empirically, the result supports the findings of Adewale et al. (2025), who reported that financial inclusion and digital payment adoption contribute positively to economic growth, and vice versa.

6. Conclusion and Recommendations

Overall, the findings suggest that Bitcoin trading volume serves as a complementary force to cashless policy implementation in Nigeria rather than a competing alternative. The results provide strong support for the theoretical arguments of Disruptive Innovation Theory, Innovation Diffusion Theory, Technology Acceptance Model, and, to a lesser extent, Financial Intermediation Theory. The findings also largely corroborate recent empirical evidence indicating that cryptocurrency adoption promotes broader participation in digital financial systems and contributes to the expansion of cashless transactions within emerging economies.

Based on the findings of the study, it is recommended that policymakers adopt a balanced regulatory approach toward cryptocurrency activities in Nigeria. Since Bitcoin trading volume was found to positively influence cashless policy implementation, regulatory authorities should establish clear frameworks that encourage innovation while ensuring financial stability and consumer protection. Commercial banks and fintech firms should leverage the growing adoption of cryptocurrencies by developing digital financial products and services that enhance electronic payment usage and strengthen the cashless ecosystem. Furthermore, efforts should be intensified to improve digital financial literacy among individuals and businesses to promote informed participation in cryptocurrency and electronic payment transactions.

The study also recommends that monetary authorities pursue policies aimed at maintaining macroeconomic stability, particularly with respect to inflation, interest rates, and exchange rate management, as these variables influence the adoption and growth of cashless transactions. Additionally, continued investment in digital payment infrastructure, cybersecurity, and financial technology innovation is essential to improve the efficiency, accessibility, and reliability of electronic payment systems. Finally, greater collaboration among regulators, commercial banks, fintech companies, and digital asset service providers should be encouraged to facilitate the integration of emerging financial technologies into Nigeria's evolving cashless economy.

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