

Economic Implications of Cryptocurrency Adoption: Challenges and Prospects

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Abstract

The emergence of blockchain technologies seems to experience rapid growth and generated lots of activities around the globe, where people use cryptocurrencies for transactions and as investments. Nigeria's cryptocurrency market is surging due to the devaluation of the naira and has caused local currency to depreciate. Cryptocurrencies are part of a broader wave of technology that facilitate peer-to-peer (P2P) commerce and personalization of market products. The technology creates money without central banks and facilitates payment without financial institutions. This paper explores the economic implications of cryptocurrency adoption. The study highlights the strengths and limitations of both traditional financial systems and decentralized alternatives in an overview. This paper also sheds light on the potential economic implications, challenges, and prospects associated with cryptocurrency adoption. The paper serves to inform policymakers, researchers, and market participants in understanding and navigating the evolving landscape of cryptocurrencies and their role within the broader economy.

Keywords: cryptocurrencies, adoption, prospects, economic

Introduction

Cryptocurrency is a digital kind of money that operates on the internet and uses cryptographic capabilities to carry out financial transactions. Cryptocurrencies, which have their roots in blockchain technology, have gained worldwide attention since the inception of the first Cryptocurrency in 2008, and their popularity has steadily increased since then. The concept behind the development of cryptocurrencies is to diminish authority from a central entity and enable a "trustless" and decentralized financial system. Cryptocurrency uses blockchain technology to attain transparency, decentralization, and immutability (the quality of a blockchain ledger to stay unmodified, unchanging, and indelible) (Olorundare *et al.*, 2023).

Due to the rapid expansion of Information and Communication Technologies (ICT), many everyday tasks have been transformed into digital formats, resulting in increased efficiency and flexibility. Many internet users have transitioned to the virtual realm, where cryptocurrency has emerged as a novel commercial phenomena facilitating the trade,

purchase and sale of digital goods. Cryptocurrency refers to valuable and intangible assets that are used in online platforms and networks, including online games, social networks, peer-to-peer networks, and virtual worlds. Over the years, cryptocurrency has been extensively used in many ways.(Olorundare *et al.*, 2023)

In the realm of technical progress, bitcoin is more appealing to investors that prioritize privacy and the ability to generate wealth. Currently, cryptocurrencies like Bitcoin, Ethereum, Ripple, Litecoin, etc. are gaining popularity in the financial sector due to increasing demand from individuals who want to purchase them. Cryptocurrencies has significant potential to transform the financial landscape of people and businesses in emerging nations such as Nigeria. Cryptocurrency has the potential to reduce both processing costs and transaction costs, hence facilitating cross-border payments. This has advantages for remittance payments, international commerce, and peer-to-peer lending. (Agama, 2021).

The emergence of cryptocurrencies has introduced a new period of financial creativity, with significant consequences for the worldwide economy. Cryptocurrencies, which are digital assets that function on decentralized networks using blockchain technology, have garnered substantial interest and acceptance in recent years. Cryptocurrencies are gaining acceptance as a substitute for traditional currencies, which has significant consequences for monetary policy and macroeconomic indicators. Nigeria has a significant volume of bitcoin trade. In addition to the United States, this nation is the second-largest market for Bitcoin. The increasing use of cryptocurrencies in Nigeria, despite the lack of recognition by the Central Bank of Nigeria, indicates a rising indifference towards conventional forms of investment in the economy(Ebizie *et al.*, 2022). It might also indicate the desire for investment opportunities from a significant segment of our society, namely the young generation.

This paper aims to explore the economic implications of cryptocurrency adoption, its challenges and prospects. By examining key aspects such as monetary policy, financial inclusion, market efficiency and innovation, regulatory frameworks, and investment opportunities, this paper seek to provide a comprehensive understanding of how cryptocurrencies impact the economy and its various stakeholders.

Overview of Conventional Financial Systems

Conventional financial systems have played a crucial role in supporting worldwide economic activity by enabling the movement of money, delivering financial services, and executing monetary policies. It is crucial to comprehend the fundamental elements and attributes of these systems in order to make comparisons with the decentralized nature of cryptocurrencies. Central banks have a vital function in conventional financial systems since they oversee monetary policy and ensure economic stability. Central banks have authority over the money supply, determine interest rates, and use strategies to limit inflation and stimulate economic expansion. Central banks serve as lenders of last resort, providing liquidity to banks and ensuring the stability of the financial system. Commercial banks play a central role in conventional financial systems by facilitating financial intermediation (Olorundare *et al.*, 2023). They engage in the acceptance of deposits, supply of loans, and

provision of a variety of financial services including payment processing, credit provision, and investment advising. These banks serve as mediators between individuals who save money and those who borrow money, facilitating the effective distribution of capital in the economy. Regulatory frameworks and oversight are developed by government bodies to oversee traditional financial systems. These frameworks have the objective of preserving the honesty and reliability of financial markets, safeguarding customers, and guaranteeing the stability of the financial system. Regulatory entities, such as financial authorities and regulatory agencies, ensure compliance with laws and regulations pertaining to banking, securities, insurance, and other financial operations.

Conventional financial systems depend on established market infrastructure, such as stock exchanges, bond markets, derivatives markets, and other trading platforms (Onyekwere *et al.*, 2023). These infrastructure components provide as a foundation for market players to engage in the trading of financial products, secure funding, and mitigate risks. Fiat currencies, which are issued and controlled by central banks, are used in traditional financial systems as legal tender. Fiat currencies get their value from the faith and confidence placed in them by the government and are officially recognized as legal currency for financial transactions within a particular jurisdiction. To have a deeper knowledge of cryptocurrencies as decentralized alternatives, it is important to comprehend the components and operations of existing financial institutions.

Overview of Cryptocurrency

Cryptocurrencies are distinct from conventional currency since they lack a tangible presence. Furthermore, these currencies lack a centralized body or central bank that oversees the issue of the currencies and transactions using them. Furthermore, they exhibit distinctions from digital payment processes or services. The reason for this is because, digital payment systems serve as platforms for conducting online transactions using traditional currency, and as a result, they are usually expressed in terms of conventional currency. Cryptocurrencies, in contrast, are digital representations of money and often do not have a specific value in traditional currency (Al-Amri *et al.*, 2019). Currently, the cryptocurrency sector comprises more than 1,400 currencies, each with different user bases and transaction volumes (Cyril *et al.*, 2024a).

The predominant cryptocurrencies are Bitcoin, Ethereum, Dash, Monero, Ripple, Ethereum Classic, Litecoin, NEM, Augur, and Mailsafecoin. The emergence of bitcoin has ignited scholarly and cultural discussions on its classification as a form of property and its legal standing in various countries. The inherent characteristics of bitcoin are veiled in ambiguity, and to the dismay of authorities, cryptocurrencies do not easily conform to any certain classification (Rhoda Adura Adeleye *et al.*, 2024). In order to properly and efficiently govern cryptocurrencies, it is necessary to first determine their legal status. The categorization of cryptocurrencies as a commodity, collectible, money, or security is a subject of frequent debate (Grinberg, 2012). Once again, there is a common question about whether the rights linked to Cryptocurrency are based on a contract, and to what degree can Bitcoin, for instance, be considered a choice in action (Fakunmoju *et al.*, 2022).

The cryptocurrency business exhibits volatility in its value, as seen in the image above. Nevertheless, it is important to acknowledge that it has some potential advantages. The conventional physical payment system follows a sequence of payment protocols and involves expenses such as infrastructure maintenance and wages. In contrast, cryptocurrency operates through the internet and offers a decentralized payment system. Supporters of cryptocurrency argue that it provides a more cost-effective payment system, resulting in improved economic efficiency. Moreover, those who lack confidence in several financial organisations may see cryptocurrency as a favourable option.

Cryptocurrencies have risen as a disruptive force in the financial landscape due to its decentralized structure and use of blockchain technology, providing an alternative to existing financial institutions. This section offers an overview of cryptocurrencies and decentralized alternatives, elucidating their core principles and characteristics. Cryptocurrencies are digital assets that use cryptographic methods to ensure the security of transactions and regulate the generation of new units. Decentralized networks are its operational platforms, usually fueled by blockchain technology, enabling transparent and unchangeable transaction records. Cryptocurrencies function as means of commerce, repositories of value, and, in some instances, units of account. Bitcoin, introduced in 2009, emerged as the pioneering and well recognized cryptocurrency. However, many other cryptocurrencies have been created since, such as Ethereum, Ripple, and Litecoin.

Cryptocurrencies are characterized by their decentralized governance system. Cryptocurrencies function by the use of a decentralized network of nodes to verify transactions and uphold the security of the blockchain, rather than depending on centralised entities such as banks or governments.(Fakunmoju et al., 2022) This decentralised governance approach obviates the need for intermediaries, reduces dependence on centralised institutions, and allows individuals to exert direct control over their assets. Blockchain technology is a decentralised and transparent ledger that records all transactions across a network of computers. Cryptocurrencies depend on this technology. Every transaction, known as a "block," is appended to a sequence of preceding transactions, forming an unchangeable and time-ordered record. This technology guarantees transparency, security, and resistance to fraud or manipulation. Tokenization and Smart Contracts: Cryptocurrencies have facilitated the implementation of tokenization, a process that includes the representation of tangible assets, such as real estate, artwork, or financial instruments, as digital tokens on a blockchain. These tokens may be easily purchased, traded, and transferred, enabling fractional ownership and enhanced liquidity.

In addition, cryptocurrencies like as Ethereum facilitate the implementation of smart contracts, which are autonomous agreements with predetermined conditions that execute themselves. Smart contracts streamline contract enforcement, eliminating the need for intermediaries and facilitating the operation of diverse decentralised apps (DApps) on blockchain systems. Public and Private Keys: Cryptographic keys are used by users to engage in transactions using cryptocurrencies. Public keys function as recipients' addresses for receiving payments, while private keys are securely retained by users to authenticate and

digitally sign transactions. This cryptographic approach guarantees the safe and confidential ownership of bitcoin assets.

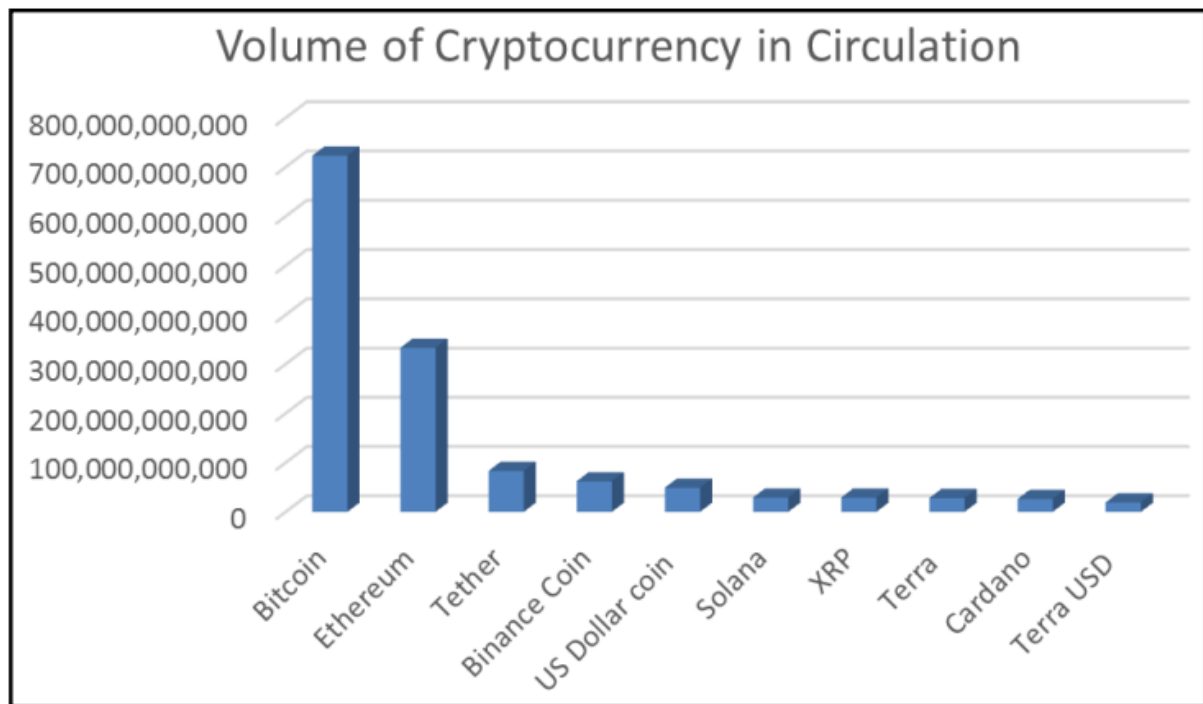


Figure 1. Volume of cryptocurrency in circulation (Cyril *et al.*, 2024b).

Top 10 Cryptocurrencies and their volume in circulation include: Bitcoin- \$723,000,000,000; Ethereum-\$333,000,000,000; Tether: \$83,000,000,000; Binance coin-\$62,000,000,000; U.S. Dollar Coin-\$49,000,000,000; Solana-\$29,000,000,000; XRP-\$29,000,000,000 Terra-\$28,000,000,000; Cardano- \$26,000,000,000 and TerraUSD -\$19,000,000,000 (Cyril *et al.*, 2024b).

Comparative Analysis of Conventional financial system and Cryptocurrencies

When evaluating the economic impact of cryptocurrency adoption, it is important to take into account monetary policy and central banking. This section contrasts the financial systems that are under the authority of central banks with the decentralized nature of cryptocurrencies. Central banks are responsible for establishing monetary policy in traditional financial systems. They exert influence on the money supply, inflation, and economic stability via the manipulation of interest rates, open market activities, and reserve requirements. Central banks fulfil the role of lender of last resort during financial crises and ensure the stability of the banking sector by regulating the economy.

Cryptocurrencies are characterised by their decentralized nature and lack of a central bank. The combination of a fixed supply and decentralized governance of cryptocurrencies poses challenges for the implementation of traditional monetary policy approaches.(Jaiswal, n.d.) The use of cryptocurrencies might impact the effectiveness of traditional monetary policy. If cryptocurrencies become widely used, central banks might potentially lose their ability to manage money supply, interest rates, and inflation. Central banks may face challenges in effectively controlling monetary policy inside a decentralised cryptocurrency

market. Cryptocurrency adoption has a significant influence on financial stability. Conventional financial institutions often have measures like as deposit insurance and regulations in place to ensure stability. However, cryptocurrencies have unique risk profiles. Cryptocurrencies, being decentralised and unregulated, might potentially provide risks to investor protection, market manipulation, and systemic dangers. The lack of synchronisation and alignment between cryptocurrencies and traditional financial institutions might provide difficulties for regulators. Cryptocurrencies have the potential to impact the movement of money across borders, the stability of currency rates, and the integration of financial markets. Conventional financial systems rely on banks and infrastructure.

Many people throughout the globe, particularly in developing countries, do not have access to financial services because of high costs, a lack of required documents, and limited physical access (Nadeem *et al.*, 2021). Exclusion impedes their ability to save, borrow, and participate in economic activities. Cryptocurrencies have the potential to enhance financial inclusion by providing alternative financial services. Cryptocurrencies enable individuals to access financial services without relying on traditional banking institutions. Decentralised systems provide services for conducting transactions, storing data, and accessing financial services.

The stock, bond, and derivatives markets have been firmly entrenched in conventional financial systems. Centralised systems provide the benefits of liquidity, price discovery, and efficient trading (Olorundare *et al.*, 2023). Nevertheless, the presence of intermediaries, extended time frames for completing transactions, and limited availability for market participants might lead to inefficiencies. Decentralising and developing technology, cryptocurrencies have the potential to enhance market efficiency and foster innovation. Decentralised exchanges are a crucial aspect in determining the efficiency of cryptocurrency markets. Cryptocurrencies allow for direct transactions between peers, eliminating the need for intermediaries (Nadeem *et al.*, 2021). This has the potential to enhance efficiency, reduce transaction costs, and enable uninterrupted trade.

Crypto technology enables transparent and instantaneous settlement of transactions, therefore reducing settlement risks and enhancing market efficiency. Cryptocurrencies enable individuals who encounter geographical, legal, or economic barriers to participate in markets. Cryptocurrencies have given rise to decentralised finance (DeFi) platforms, which enable activities like as lending, borrowing, and yield farming. Users may participate in financial transactions directly on these platforms, without the need for intermediaries. Conventional financial systems adhere to government rules (Holtmeier & Sandner, n.d.). Financial authorities and regulatory bodies establish and implement legislation to safeguard financial markets, clients, and the financial system. Cryptocurrencies are subject to rapidly evolving rules (Fakunmoju *et al.*, 2022). Several countries have embraced cryptocurrencies and established legal frameworks, while others are in the process of developing them. The decentralised and global nature of cryptocurrencies poses challenges for regulating the ecosystem.

Cryptocurrency Regulations around the World

In industrialised countries such as the United States, digital currencies are not recognised as official forms of payment, but the trading of cryptocurrencies is legal. The legislation around cryptocurrency vary from state to state and are governed by the Bank Secrecy Act (BSA)(Pandya *et al.*, 2019). Consequently, bitcoin exchange service providers are required to register with the Financial Crimes Enforcement Network (FinCEN), provide their report to authorities, and maintain relevant documents. In December 2020, FinCEN introduced a new regulatory framework for cryptocurrencies. The rule would mandate the collecting of data as a crucial prerequisite for crypto exchange and wallet operations. In Canada, cryptocurrency is not recognised as a form of official money, but the act of exchanging cryptocurrency is lawful(Nadeem *et al.*, 2021). However, any entity providing cryptocurrency exchange services must comply with the requirement of registering with the Financial Transaction and Reports Analysis Centre of Canada (FinTRAC). Cryptocurrency may be used for purchasing items both online and offline at establishments that acknowledge them as a form of payment. In 2014, Canada enacted the Digital Currencies Act as part of the Proceeds of Crime (Money Laundering) and Terrorist Financing Act (PCMLTFA). In 2018, the Central Banks of Canada classified cryptocurrencies as securities, meaning that Canadian tax regulations are applicable to transactions involving cryptocurrencies.

Cryptocurrency is not considered a legal cash in Singapore, however, the exchange of cryptocurrency is permitted by law. Service providers in this industry are required to register with the Monetary Authority of Singapore (Chiu and Koepl, 2017). In Singapore, tax officials classify Bitcoins as commodities and hence subject them to goods and services tax. Australia and Japan classify cryptocurrencies as a kind of property and require it to be registered with the Australian Transaction Reports and Analysis Centre (AUSTRAC) and the Financial Services Agency, respectively. Australia has made significant strides in enacting cryptocurrency rules. Since 2018, AUSTRAC has required service providers to register, verify, and identify users, maintain records, and adhere to the restrictions set by the centre. In Japan, regulations are also forward-thinking. In 2020, the Japanese Virtual Currency Exchange Association (JVCEA) was formed, and all cryptocurrency exchange service providers are required to be members of this association. Cryptocurrencies are not recognised as official forms of currency in China and their trading is prohibited by law.

In 2013, the People's Bank of China (PBOC) prohibited financial institutions from engaging in Cryptocurrency transactions, and in 2017, a prohibition was imposed on cryptocurrency trading (Affandi & Rifkila, 2023). Despite the comprehensive prohibition of domestic cryptocurrency exchanges in China, it is still feasible to find alternative solutions by using certain international platforms and websites that are not detected by China's internet firewall. China has not shown any signs of lifting the prohibition in the near future. However, China's central bank has announced the launch of e-CNY digital money in 2021. The token has been created as a substitute for physical currency, such as cash and coins, and may be used as a means of conducting transactions. The Bank of Ghana in Africa does not consider cryptocurrencies as a valid form of money due to the lack of official clearance to endorse it as a means of transaction. Nevertheless, Ghana has just enacted the Payment Systems and Service Bill, which is likely to facilitate the regulation of bitcoin in the country. Cryptocurrency is not considered a legal money in South Africa. However, in 2016, the South

African Reserve Bank (SARB) formed an Intergovernmental Fintech working group to create laws for regulating cryptocurrencies, machine learning, and other forms of payment advice. Nevertheless, South Africans continue to engage in bitcoin trading. Namibia, Mauritius, and Kenya do not recognise digital money as a valid form of payment. Conversely, Tunisia has enthusiastically adopted cryptocurrencies and has since been implementing favourable rules. In 2015, Tunisia and Saudi Arabia jointly introduced their Cryptocurrency. In 2016, Senegal introduced its Cryptocurrency, the eCFA, which is equivalent in value to the CFA franc. In 2015, the Cameroonian Government conducted a trial of a digital money known as Test. The test was deemed successful, however it was ultimately discontinued owing to the exorbitant transaction cost (Holtmeier & Sandner, n.d.).

The Central Bank of Nigeria Regulatory Role

The Nigerian government has been cautious about cryptocurrency because to the negative experiences Nigerians have had with numerous Ponzi scams, since they perceive cryptocurrency to be similar to such schemes. According to Agama (2021) a ponzi scheme is a deceptive investment swindle that guarantees investors enormous returns with little risk. The system operates by using the investments of new investors to produce profits for early investors, which makes it fraudulent. In Nigeria, the popularity of bitcoin was a direct reaction to the financial crisis of 2016, which restricted international trade owing to a lack of foreign currency. Both Nigerian and American individuals are drawn to bitcoin due to its immunity to financial crises and its effectiveness as a means of trade in such circumstances.

The upshot of this tendency is that whereas traditional currencies are susceptible to government interventions, bitcoin is unaffected by such influences. Therefore, in times of financial instability, bitcoin becomes a more feasible option in the nation. In Nigeria, bitcoin functions largely as an alternate investment option that is independent of any economic constraints or uncertainties. The publication titled "Vanguard News Paper" was released on March 28, 2018. It has appealing prospects and provides a significant return on investment to investors. According to Agama (2021), it would provide investors with the ability to have a verified identity on the internet. In 2017, the Nigerian Federal Government issued two public statements, expressing its opposition to the usage of Bitcoin and cautioning people, corporations, and banks from engaging in Bitcoin transactions due to its lack of government oversight. The illegality of cryptocurrency stems from its inherent anonymity, which facilitates its use in funding illicit acts such as money laundering and terrorism. Additionally, the volatile nature of cryptocurrency poses the risk of unexpected market crashes. This warning was necessary due to the catastrophic consequences of the several ponzi scams in Nigeria that abruptly collapsed from late 2016 to the first quarter of 2017, resulting in significant financial losses for many Nigerians (Agama, 2021).

The Central Bank of Nigeria (CBN) released a letter on February 5, 2021, which prohibits deposit money banks (DBM), non-bank financial institutions (NBFI), and other financial institutions (OFI) from engaging in cryptocurrency transactions or enabling payments for cryptocurrency exchanges (Olorundare et al., 2023). The Central Bank of Nigeria (CBN) has instructed all Deposit Money Banks (DMBs), Non-Bank Financial

Institutions (NBFIs), and Other Financial Institutions (OFIs) to identify individuals and organisations involved in cryptocurrency trades inside its systems and promptly terminate these accounts. The CBN's letter explicitly noted that regulated institutions are barred from engaging in cryptocurrency transactions or facilitating payments for cryptocurrency exchanges. The Securities and Exchange Commission (SEC), which previously expressed its desire to oversee digital assets like cryptocurrencies, has said that it would collaborate with the Central Bank of Nigeria (CBN) to develop the required laws if cryptocurrency transactions are allowed in the future. Previously, both the CBN and the SEC had not explicitly banned the trading of cryptocurrencies or the enabling of payments for cryptocurrency exchanges. After sending a letter on February 5, 2021, the Central Bank of Nigeria (CBN) released a Press Release titled "Response to Regulatory Directive on Cryptocurrencies" (Onyekwere et al., 2023). The CBN provided a justification for its "policy reminder" in the Press Release, based on several reasons that will be examined separately. It is important to remember that this letter is only a circular and does not have the status of a law.

The first reason is that cryptocurrencies are created by businesses that are not regulated or licenced, which contradicts the main responsibilities of the Central Bank of Nigeria (CBN) as the issuer of legal cash in the country. The CBN's letter does not provide a clear definition or categorization of "cryptocurrency". This indicates that the Central Bank of Nigeria (CBN) implemented a comprehensive prohibition on enabling financial transactions for cryptocurrency exchanges, regardless of the specific kind of cryptocurrency being exchanged on the exchange. Put simply, the CBN did not make a distinction between cryptocurrencies that are employed as a form of official currency, those that possess the qualities of a financial investment (security tokens), and those that are used to provide customers a product or service (utility tokens). The decision to shut accounts of individuals and/or organisations involved in cryptocurrency transactions and prohibit the facilitation of payments for cryptocurrency exchanges, based on the argument that cryptocurrencies are being utilised as a form of legal money without appropriate classification, lacks justification. The second reason for the restriction of cryptocurrencies is their inherent characteristics of "anonymity," "obscurity," and "concealment," which make them highly suitable for facilitating unlawful operations. While cryptocurrencies like as Moreno and Zcash provide privacy features that conceal transaction information and the amounts involved by obfuscating participant addresses, most cryptocurrency transactions are recorded on a public and unchangeable ledger, which may be monitored and traced. In addition to the rigorous KYC/AML restrictions imposed on cryptocurrency exchanges, assets such as Bitcoin and Ethereum, which were previously considered "anonymous" and "high risk," may now be easily tracked. Furthermore, it is important to note that cryptocurrency is not considered illegal in Nigeria. The Central Bank of Nigeria (CBN) has said that some cryptocurrencies are being mostly utilised as speculative assets rather than as a medium of exchange. This has led to considerable price fluctuations, posing a potential risk to financial institutions. The impact of an asset's volatility on financial systems is a matter of economic discourse, and economists are more apt to discuss this matter.

Nevertheless, it is argued that unless a crime is being committed, the instability of an asset or its speculative usage is not a valid justification for closing the accounts of individuals or corporations engaging in transactions with such assets. Indeed, the majority of investment assets are of a speculative nature. Investors purchase gold, real estate, stocks, and other assets with the expectation of their prices rising in the future. Regarding volatility, the exchange rate between the naira and the dollar has consistently shown fluctuation. However, this volatility has not resulted in the suspension of forex trading. Stocks exhibit high levels of volatility. The Gamestop stock price recently plummeted by 72% over a span of two days, after surging by almost 2000% in less than three weeks (Oladipupo and Amodu, 2022). Volatility and speculation are not exclusive to crypto assets. Finally, it is important to note that utility and security tokens, regardless of their usage or function, are often referred to as "cryptocurrencies" although they possess inherent value due to their diverse range of applications. For instance, the WePower token, which utilises smart contracts on the blockchain, serves as a tangible representation of energy that enables users to engage in buying and selling transactions. The SEC has classified virtual assets/instruments into many categories, including Crypto Assets (such as non-fiat virtual money), Utility Tokens, Security Tokens, Derivatives, and Collective Investment Funds of Crypto Assets, Security Tokens, and Utility Tokens.

Cryptocurrency adoption in Nigeria

Cryptocurrency was one of the first blockchain uses to get interest from researchers, government, and business (Edime YUNUSA & Danjuma Eyibo OCHENI, 2024). Ssaharti (2021) report almost 20,000 cryptocurrencies (e.g., bitcoin, ether) with a market value of 2 trillion USD. Dixit (2023) define cryptocurrencies as “peer-to-peer electronic cash systems which allow online payments to be sent directly from one party to another without going through a financial institution”. Policymakers continue to monitor Nigeria's crypto asset use rise. Nigeria is Africa's biggest economy and ranks sixth among the top 20 nations with the most grassroots crypto adoption, according to the 2021 Chain analysis Global Crypto adoption Index. Nigerians embrace crypto assets—why? Policymakers are concerned about increased use, as shown by various disclaimers and advisories to deposit money in banks and other non-bank financial institutions.

Therefore, comprehending Nigeria's macroeconomic and monetary policy consequences requires a deeper knowledge of cryptocurrency use. This study examines crypto asset use in Nigeria. Policymakers' inadequate understanding of crypto asset use makes exploratory data analysis a worthwhile addition to the literature. Understanding cryptocurrency use in Nigeria is crucial. The research will give baseline data on cryptocurrency use drivers in the nation.

Nigeria trades more cryptocurrency than other countries (Dixit, 2023). According to (Olorundare *et al.*, 2023), Nigerians transacted almost \$600 million in Bitcoin between 2015 and 2020. Several overseas crypto exchanges in Nigeria trade around N4 billion naira monthly (Amugo, 2021). Thus, cryptocurrency is a \$2 trillion industry that cannot be ignored (Oladipupo & Amodu, 2022). While most of the attention elsewhere [on cryptocurrencies]

has been on speculation, trading, and investment, Africa, more than any other region, demands their usefulness, according to (Oladipupo & Amodu, 2022). As more companies and merchants use cryptocurrencies as treasury assets and payment methods, use is rising.

Nigerians use cryptocurrency as a store of wealth due to excessive inflation. Fixed-supply cryptocurrencies like Bitcoin may hedge against depreciating fiat currencies. Cryptocurrencies may help folks without bank accounts. In developing economies with large unbanked populations, cryptocurrencies may let consumers access and utilize financial services on their cellphones. Internet and digital infrastructure are key drivers. Cryptocurrencies need internet connection, thus emerging economies with better digital infrastructure are more likely to accept them. Alternative financial services including savings, lending, and payment are available with cryptocurrencies. In areas with poor banking, this is crucial. Corruption and instability in developing economies might lower trust in established financial institutions. With its transparent and secure blockchain technology, cryptocurrencies may give people confidence. Many developing market investors hope for high returns on cryptocurrencies. In nations with few investment possibilities, speculation and investment may boost adoption. Economic turmoil and upheaval frequently lead to cryptocurrency adoption. During political unrest, individuals may use cryptocurrency to secure their investments. Education and awareness efforts may help people accept bitcoin by explaining its advantages. Governments may stimulate cryptocurrency adoption by setting legislative frameworks that foster innovation and investment.

Many Nigerian investors have invested in cryptocurrencies in hopes of enormous returns, but its future is uncertain. The Nigerian CBN and SEC have warned people about the risks of investing in the cryptocurrency market or virtual money that are not insured by the government. Dixit (2023) stated that the state's role as the final authority is not just to make laws or print money, but also to control it, serve as a last resort, and ensure credibility. The Chartalism monetary theory of money states that money is legal tender because it is generated by the government, hence official recognition of crypto-currency as a medium of exchange would be contrary. In summary, the state decides what to accept as a medium of trade. The state has the ability to regulate crypto-currency usage by its people. The Nigerian government reiterates that crypto-currencies are not legal currency, thus banks and institutions who trade them do so at their own risk. The authorities warned against investing in uncontrolled, risky markets. Financial institutions, including fintech companies, must verify the identity of electronic transaction customers, integrate and implement, know your customers, process, and keep subscribers' data safe for at least two years under the Nigeria cyber-crime (prohibition & Prevention) Act 2015. All CBN-regulated financial institutions must follow fintech rules, preserve enough customer data, and prevent unauthorised dissemination of such data. Crypto money goes beyond consumer data security to untraceable data. This is why the Nigerian government declared that anybody who invests in such money does so at their own risk if they lose.

The Central Bank of Nigeria (CBN) reiterated its January 12, 2017 directive to Nigerian banks to stop trading in cryptocurrencies on Feb. 5, 2021 (Olorundare *et al.*, 2023). The CBN circular stated that “the CBN has no comfort in cryptocurrencies at this time and will continue to do all within its regulatory powers to educate Nigerians to desist from its use

and protect our financial system from activities of fraudsters and speculators” (Central Bank of Nigeria, 2021). (Ariwoola, n.d.) said that the prohibition allowed the Central bank to handle crypto transactions' anonymity. After Nigeria's Central Bank 2021 limitation, cryptocurrencies were traded at a premium on the Luno Exchange (Onyekwere *et al.*, 2023). Virtual currencies are becoming more popular in the nation. The economy experienced Covid -19, the crude oil price crash, the drop in foreign remittances, year-on-year CPI inflation of about 16%, the Nigerian Naira was devalued twice at the Investors' and Exporters window, the economy re-entered a recession, restrictions on the use of forex for some imports, and the reintroduction of financial institutions \$100 a month limit/restrict. These and other events pushed Nigerians to seek cryptocurrency alternatives, making Nigeria the world's second-largest P2P bitcoin market (Agama, 2021).

Comparative Analysis cryptocurrencies adoption in Nigeria with Global Trends

Nigerian cryptocurrency adoption is intertwined with global financial innovation (Onyekwere *et al.*, 2023). A comparison with worldwide trends shows the importance of international cooperation, regulatory harmonisation, and major digital currencies, revealing Nigeria's unique position in the emerging digital financial ecosystem. Global organisations' international partnerships shape cryptocurrency adoption (Oladipupo & Amodu, 2022). The International Monetary Fund (IMF), World Bank, and the Bank for International Settlements (BIS) are helping member nations manage digital currency difficulties and potential. Global organisations provide information sharing, policy direction, and capacity development, according to the report. Nigerian countries may use digital currency data to improve their regulatory frameworks and technology infrastructure via collaborative initiatives (Pandya *et al.*, 2019). International cooperation also promotes cryptocurrency interoperability and connection via cross-border efforts. Regional partnerships and cross-border pilot programmes are increasing, enabling frictionless digital transactions across nations, according to the report.

Nigerian countries are researching digital currency cross-border payments, trade settlements, and remittances. Such agreements boost economic cooperation and allow Nigerian nations to use digital money to solve regional issues. Global regulatory harmonization initiatives attempt to standardise digital currency uptake and usage. International organisations like the Financial Action Task Force (FATF) and the G20 are aiming to create a unified regulatory framework (Pandya *et al.*, 2019). Standardization reduces regulatory risks and uncertainties in cross-border transactions, according to the research. As global regulatory standards evolve, Nigerian countries may benefit from adopting best practices, aligning with international norms, and creating a more transparent and safe cryptocurrency environment.

Regulatory harmonization affects Nigeria as a country greatly. Harmonization ensures uniformity, but the report stresses the need for flexibility to meet Nigeria's specific problems and possibilities. African regulatory agencies should actively participate in international debates to ensure that frameworks are flexible to the continent's different economies (Chiu & Koepl, 2017). If done correctly, regulatory harmonization may boost digital currency legitimacy, attract foreign investment, and ease cross-border transactions. African authorities

must combine international norms with locally customized measures to solve regional difficulties.

Bitcoin and Ethereum's worldwide impact affects Nigeria's cryptocurrency scene (Rhoda Adura Adeleye *et al.*, 2024). Bitcoin is appealing as a decentralised asset and inflation hedge. Smart contracts on Ethereum have spurred the creation of DApps and blockchain-based platforms. According to the survey, these global actors impact bitcoin adoption in Nigeria, where blockchain technology is used for practical purposes as well as speculation. Nigerian companies and innovators are using global digital currencies to solve local financial, supply chain management, and identity verification problems (Rhoda Adura Adeleye *et al.*, 2024). Major digital currencies affect Nigeria's economy. Major digital currencies may improve financial inclusion, remittance efficiency, and transaction costs, according to the report. Price volatility, regulatory uncertainty, and technical infrastructure constraints remain. Nigerian countries could take use of major digital currencies while assessing their hazards (Olorundare *et al.*, 2023). Nigerian governments, financial institutions, and global Cryptocurrency players can collaborate to drive innovation and responsible Cryptocurrency use, according to the report.

Comparisons with worldwide patterns show how intertwined cryptocurrency adoption is. International partnerships, regulatory harmonization, and major digital currencies impact Nigerian countries' digital currency adoption difficulties and potential. Nigeria must strategically participate in global trends towards a digital financial future to harness digital currencies' revolutionary potential for sustainable economic growth.

Economic implications of cryptocurrency adoption on Nigerian Economy

The introduction of cryptocurrencies has major economic effects and new investment possibilities. This section compares established financial systems with cryptocurrencies to assess their economic effect and potential. Cryptocurrencies might disrupt financial intermediation by allowing peer-to-peer transactions without banks. This may save costs, boost efficiency, and improve financial services. Cryptocurrencies enable efficient cross-border transactions. Coins may improve economic integration and commerce by removing middlemen and transaction costs in international trade and remittances. Cryptocurrencies may help unbanked and underbanked people access financial services. People without conventional banking services may acquire credit, participate in the digital economy, and do business more simply. Cryptocurrencies and blockchain technology may boost growth and innovation. Cryptocurrencies enable DApps and smart contracts, allowing entrepreneurship, employment creation, and technical innovation. Cryptocurrency investors may retain them long-term or trade them during price fluctuations. Cryptocurrency companies raise funds via Initial Coin Offerings (ICOs). Investors may buy ICO tokens to obtain early access to breakthrough platforms and technology. Cryptocurrencies may tokenize real estate, art, and intellectual property. This allows fractional ownership, liquidity, and new markets for illiquid assets. Decentralised Finance (DeFi): Blockchain-based DeFi systems enable lending, borrowing, and yield farming. These platforms allow investors to earn interest and discover new financial solutions.

Investors may utilize the investment return to build the nation. Many governments adopt crypto money because of the financial benefits. So Nigeria may tap into it and raise tax revenue for infrastructure. Corruption is a major economic issue in Nigeria. As of January 2020, Transparency International placed Nigeria 146th out of 180 nations in corruption elimination (Olorundare *et al.*, 2023). It was the fourth most corrupt West African nation. Developing a budget-tracking tool to monitor all government revenue and spending using crypto-currency block chain technology may reduce corruption. All revenue and spending transactions will be saved in the block chain application method, and network members will be updated regularly. Public scrutiny would include transaction timing, amount, receiver, endorser, and account number. Alternative financial structures will alleviate Nigerians of the burden of banking since banks are not in rural regions where most Nigerians live. Thus, Nigerians without physical branches would benefit from this mobile money. This would address the inefficiencies of the financial/banking system. The government's financial inclusion programme helps Nigerians invest, save, and get insurance. Cryptocurrency and block chain may let Nigerians access financial items regardless of location. Since most Nigerians live in rural areas and access to banks is still difficult, mobile transactions will help. Any economy needs appropriate financial services to reduce poverty and thrive. Mobile money has enabled numerous nations provide financial services to their residents. Block chain or mobile money would save rural residents money on banking, telecommunications and transportation to banks. Because not all rural regions have banks. Total acceptance requires integration with current financial models and favourable government legislation. BOFI (Banks & other Financial Institutions) and credit bureaus that give credit to SMEs are hesitant to lend to them due to a lack of data. (Onyekwere *et al.*, 2023) suggests using Block Chain Technology to implement these laws so that financial institutions can store customer financial information and monitor credit risk by authorizing customers to access their data. Block chain technology, which protects cryptocurrency, may be utilized to create ledger accounts for each person with amendment and administration capabilities.

Nigeria notoriously lacks a centralised citizen data repository. This has hampered planning, infrastructure supply, unemployment rate determination, development monitoring, and more. Crypto money block chain technology can overcome this problem. Since democracy began, the nation has sought methods to improve its electoral system to ensure a free and fair election that would inspire faith in its population. Block chain technology can do that. (Oladipupo & Amodu, 2022) suggested that legalising crypto-currency as a means of exchange would lower government printing and maintenance costs. It would also minimize government expenditures like note storage, transportation, security, and counterfeit note detecting systems.

Challenges to Cryptocurrency Adoption

Lack of Central Authority: Crypto money has no central authority. The transaction and account data of each participant are available for all members to observe and track, but no administrator monitors cryptocurrency swings. This made it hard to find, identify, and hold

people accountable for any problem that required investigation (Holtmeier & Sandner, n.d.). Thus, such money is unlawful in countries without a central authority.

Lack of Anonymity: Another issue, since all cryptocurrencies lack anonymity. Participants in the transaction are strangers. This may enable shady and illegal behaviours they wouldn't otherwise do.

Drive cybercrime: The anonymity and absence of central authority of cryptocurrencies may encourage money laundering, terrorism, and the unlawful trade of narcotics, weapons, and human organs.

Lack of Trust: Nigerians don't trust each other, and prior ponzi scam experience (e.g. MMM) discourages investors. Due to its novelty, many Nigerians are wary about investing in crypto currency.

Hackable: Cryptocurrency transactions need internet access, making them susceptible to hackers. Cryptocurrency technology cannot distinguish between rightful owners and hackers, so it is easy to hack another person's account by manipulating the crypto private key. This is unlike banking, where central authorities monitor activities. Onyekwere *et al.*, (2023) states that courts cannot overturn compromised transactions.

Definitions vary per country: All throughout the globe, nations interpreted crypto-currency differently depending on its attributes. Some nations call it real assets, intangible assets, convertible virtual money, etc. According to (Chiu & Koepl, 2017), Israel and Norway consider cryptocurrencies taxable assets, the UAE considers it a virtual commodity, and the European Central Bank called it virtual money in 2012. In 2013, the US Treasury called it virtual money, in 2015 the commodity future trading commission called it a commodity, and in 2018 the Supreme Court called it a fund. Its many names and meanings make it difficult for the authorities to legalize its use.

Lack of electrical infrastructure: Nigerians cannot consistently enhance power supply. This would impact investor transactions.

Prospects of cryptocurrencies adoption in Nigeria economy

The prospects of Cryptocurrency adoption in Nigeria present a dynamic landscape, characterized by a myriad of opportunities and challenges (Linh & Nguyen, 2024). Nigeria, with her diverse economies and demographics, grapples with a significant portion of the population lacking access to formal banking services (Onyekwere *et al.*, 2023). Digital currencies, particularly those built on mobile technology, offer a transformative solution to extend financial services to the unbanked and underbanked. With the prevalence of mobile phones across Nigeria, even in remote areas, digital currencies can provide a platform for individuals to participate in the formal economy, access credit, and build a financial identity. As initiatives promoting financial literacy and awareness gain traction, digital currencies have the potential to uplift marginalized communities, fostering economic empowerment and resilience (Ebizie *et al.*, 2022).

Cryptocurrency adoption in Nigeria also presents a unique opportunity for catalyzing economic growth. Nigerian nations can enhance transparency, security, and efficiency in various sectors, including supply chain management, trade finance, and remittances. The

innovative use of digital currencies in facilitating cross-border transactions and trade settlements can contribute to regional economic integration (Chiu & Koeppl, 2017). Additionally, the emergence of blockchain-based startups and entrepreneurial ventures in Nigeria showcases the potential for digital currencies to spark innovation and create new economic opportunities. As Nigerian economies seek diversification and sustainable growth, digital currencies offer a promising avenue for fostering a resilient and technologically advanced financial landscape.

Suggestions to the Challenges to Cryptocurrency Adoption

Establish a regulatory framework that balances decentralized principles with necessary oversight and consumer protection.

Encourage collaboration between cryptocurrency exchanges, wallets, and other stakeholders to develop industry standards and best practices.

Implement Know-Your-Customer (KYC) and Anti-Money Laundering (AML) regulations to ensure that users are identified and transactions are traceable.

Develop privacy-preserving technologies that protect users' identities while still allowing for necessary oversight.

Implement robust AML and Combating the Financing of Terrorism (CFT) regulations to prevent illicit activities.

Encourage international cooperation and information sharing to combat cross-border cybercrime.

Educate investors and the general public about the benefits and risks of cryptocurrency.

Encourage transparency and accountability among cryptocurrency exchanges, wallets, and other stakeholders.

Develop and implement robust security measures, such as multi-factor authentication and cold storage options.

Encourage users to take responsibility for their own security and use best practices to protect their accounts.

Encourage international cooperation and standardization of cryptocurrency regulations.

Develop clear and concise guidelines for cryptocurrency taxation and legal status.

Invest in renewable energy sources and grid modernization to improve power supply.

Encourage the development of offline cryptocurrency transaction solutions, such as paper wallets and SMS-based transactions.

Increase public awareness and education about cryptocurrency and its benefits and risks.

Encourage collaboration between stakeholders, including government agencies, cryptocurrency exchanges, wallets, and users.

Develop and implement robust regulations that balance decentralized principles with necessary oversight and consumer protection.

Encourage innovation and development of new technologies and solutions to address existing challenges.

Conclusion

The adoption of cryptocurrencies has significant economic implications that reshape traditional financial systems. This paper has explored the economic implications of cryptocurrency adoption, including its challenges and prospects. Cryptocurrencies challenge traditional monetary policy frameworks by operating with decentralized governance and fixed supply limits. While this presents challenges for traditional monetary tools, it also opens up opportunities for innovation and the exploration of alternative monetary systems. Cryptocurrencies have the potential to bridge the gap by providing access to financial services for the unbanked and underbanked populations. With lower barriers to entry and reduced transaction costs, cryptocurrencies offer an inclusive financial ecosystem that empowers individuals and promotes economic participation.

The journey towards Cryptocurrency adoption in Nigeria is at a critical juncture, presenting both immense possibilities and formidable challenges. The transformative potential of digital currencies in advancing economic growth necessitates collaborative and strategic efforts from all stakeholders. Policymakers, financial institutions, and communities must work together to overcome infrastructure limitations and regulatory uncertainties. By embracing adaptive regulatory frameworks, investing in digital infrastructure, promoting financial literacy, facilitating international collaborations, and encouraging innovation, Nigeria can position itself as a leading player in the global digital financial ecosystem. The path forward requires a collective commitment to realizing the full potential of cryptocurrency for the nation's economy.

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