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Legal and Tax Implications of Cryptocurrency Adoption and Financial Inclusion in Yenagoa, Bayelsa State

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Abstract: *The study investigates the relationship between legal and tax implications of cryptocurrency adoption and financial inclusion in Yenagoa, Bayelsa State, Nigeria. Using a cross-sectional survey research design with primary data collected via structured questionnaires in Yenagoa, Bayelsa State, Nigeria after face and content validity. Cronbach was employed to test the reliability of the instrument, and quantitative analysis employed univariate and bivariate analysis to estimate the association between cryptocurrency adoption and financial inclusion outcomes. Findings indicate a significantly positive association between perceived legal risk (PLR) of cryptocurrency adoption and financial inclusion, a significantly positive association between volatility perception index (VPI) of cryptocurrency adoption and financial inclusion, a significantly positive association between transaction time satisfaction (TTS) of cryptocurrency adoption and financial inclusion and a significantly positive association between peer adoption index (PAI) of cryptocurrency adoption and financial inclusion. Hence, the study concluded that cryptocurrency adoption influences the access and usage of financial services for financial inclusion. The study underscores the need for proportionate regulation (risk-based know your customers, licensing of VASPs, disclosure and custody rules, targeted digital literacy programs and infrastructure investments to translate crypto's technical potential into inclusive, safe financial participation.*

Keywords: Cryptocurrency, Financial Inclusion, Legal, Taxation, Bayelsa State, Yenagoa

INTRODUCTION

The legal, regulatory and taxation of cryptocurrencies is becoming a progressively vital issue in accounting, finance and legal discussions across the globe. Current innovations, starting from decentralized finances, new forms of cryptoassets like non-tangible tokens, up to various national projects to create central bank digital currencies, have revealed that the regulation of cryptoassets is becoming an increasingly central subject. Notwithstanding the important worldwide interest in cryptoassets, there is no exclusive solution for an international legal framework for

cryptocurrencies or other cryptoassets. According to Yuan and Wang (2018), the rising decentralized framework and distributed computing paradigm fundamental Bitcoin and different cryptocurrencies has attracted extensive attention in each study and application in recent years. Cryptocurrencies have emerged as one of the most trending economic software, making this technique almost impossible to tamper with. Blockchain offers quite a few features like decentralisation, auditable recordkeeping, persistent storage, performance, and security. Blockchain and its use are not best restricted to cryptocurrency, however, in numerous different fields as well (Akhtar et al, 2019). Raju (2018) argues that cryptocurrencies and their entire technical infrastructure are still sort of unknown to most people (Tomić, 2020). Cryptocurrency is a form of virtual asset that uses a distributed ledger, or blockchain, to permit a comfortable transaction. (Härdle et al, 2019) Blockchain, the center concept or the electricity behind the fulfilment of Bitcoin, is one of the maximum trending and unusual subjects for virtual currency in recent times. The blockchain serves as a public ledger and stores transactions. According to Mordecai (2019), cryptocurrency is a type of digital money that can be generated, exchanged, and transferred without a bank or other government agency's authentication using encryption technology. The transactions (coin) are recorded in a digitized public ledger called a “blockchain”, which is a perpetual, continuous list that records each transaction between users of a cryptocurrency. Individual units of this currency are called coins, while the individual segments of the constant blockchain records are called “blocks” and commonly refer to a completed list of transactions. Each time a user transfers or sells a coin, the transaction is recorded and logged by the blockchain. Thus, the blockchain contains the payment and transaction history of every single coin in circulation and every user who once influenced a coin (Ayoola-Akinjobi, 2024).

Financial inclusion provides the ability of individuals and businesses to access and effectively use financial products and services, and it remains a critical development goal, particularly in emerging economies. According to the World Bank (2022), about 1.4 billion adults globally are unbanked, with Nigeria accounting for a significant share in Sub-Saharan Africa. Traditional financial systems face challenges in reaching underserved populations due to infrastructure limitations, high transaction costs, and bureaucratic barriers. Christian and Markus (2017) explain that the market capitalisation of cryptocurrency exceeded $200 billion. PricewaterhouseCoopers (PwC) estimates that by 2030, cryptocurrency might contribute US$1.76 trillion to the world economy. Globally, the use of cryptocurrency has been steadily rising. Hileman and Rauchs (2017) conducted a study to measure the growth in usage by compiling information from more than 150 cryptocurrency companies and individuals, spanning more than 38 nations across five continents. They found that between 2.9 million and 5.9 million people had active cryptocurrency wallets. Cryptocurrency is rapidly emerging as an additional to traditional investment methods for portfolio diversification.

In Nigeria, cryptocurrency adoption ranks among the highest globally, with the country consistently appearing in the top three for peer-to-peer trading volumes (Chainalysis, 2022). However, the regulatory environment has been dynamic, marked by the Central Bank of Nigeria’s 2017 and 2021 restrictions and its partial relaxation in December 2023, allowing banks to provide services to licensed Virtual Asset Service Providers (VASPs) (CBN, 2023). Similarly, the SEC’s

2022 rules on Issuance, Offering Platforms and Custody of Digital Assets established a Custody of digital Assets established framework for licensing and oversight of crypto-related business (SEC, 2022). Despite the growing adoption of cryptocurrency, there is limited empirical evidence on whether and how adoption translates into measurable financial inclusion outcomes. The regulatory environment is also highly uncertain, with the Central Bank of Nigeria (CBN) imposing restrictions on crypto-related banking transactions in 2021, only partially relaxing them in 2023. This regulatory ambiguity creates both opportunities and risks for financial inclusion. Therefore, the gap in this study is the absence of comprehensive research examining the extent to which cryptocurrency adoption in Nigeria genuinely enhances financial inclusion, particularly the unbanked and underbanked populations, amid economic volatility, technological barriers, and shifting regulatory policies. Without suinstitutionspolicymakers, financial institutions, and technological innovators lack a solid basis for designing frameworks that maximise the benefits of cryptocurrency while minimising associated risks such as volatility, fraud, and misuse for illicit activities. Consequently, the general objective of this study is to investigate the relationship between cryptocurrency and financial inclusion in Yenagoa, Bayelsa State. The specific objectives include the following:

1. To determine the relationship between perceived legal risk and financial inclusion in Yenagoa, Bayelsa State.
2. To assess the relationship between the volatility perception index and financial inclusion in Yenagoa, Bayelsa State.
3. To examine the relationship between transaction time satisfaction and financial inclusion in Yenagoa, Bayelsa State.
4. To investigate the relationship between the peer adoption index and financial inclusion in Yenagoa, Bayelsa State.

The following research questions guided the study:

1. Does perceived legal risk relate to financial inclusion in Yenagoa, Bayelsa State?
2. What is the relationship between the volatility perception index and financial inclusion in Yenagoa, Bayelsa State?
3. Does transaction time satisfaction relate to financial inclusion in Yenagoa, Bayelsa State?
4. What is the relationship between the peer adoption index and financial inclusion in Yenagoa, Bayelsa State?

The following research hypotheses were tested in this study:

H_{o1}: Perceived legal risk does not significantly relate to financial inclusion in Yenagoa, Bayelsa State.

Ho_2: There is no significant relationship between the volatility perception index and financial inclusion in Yenagoa, Bayelsa State.

Ho_3: Transaction time satisfaction does not significantly relate to financial inclusion in Yenagoa, Bayelsa State.

Ho_4: There is no significant relationship between the peer adoption index and financial inclusion in Yenagoa, Bayelsa State.

LITERATURE REVIEW

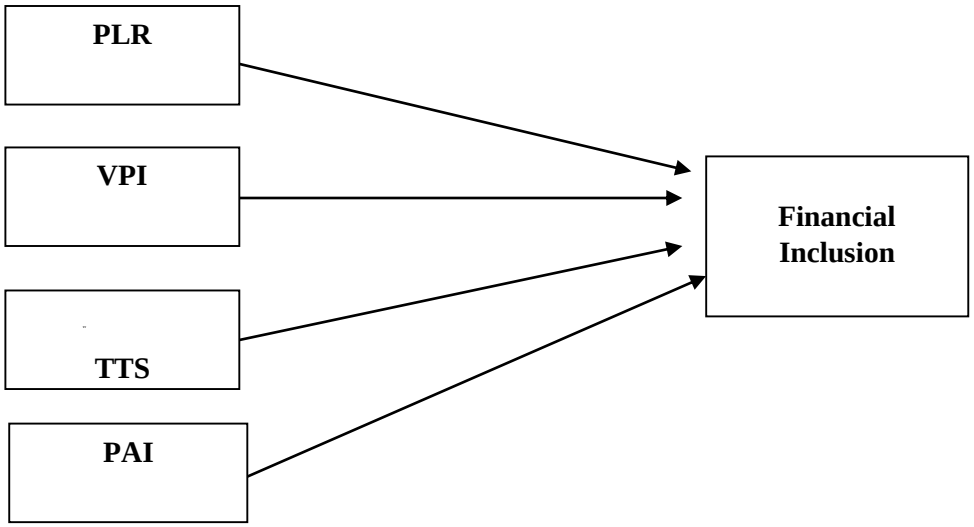

Figure 1: Conceptual Framework of Cryptocurrency and Financial Inclusion

Concept of Cryptocurrency: The term cryptocurrency combines the words cryptography (the practice of secure communication) and currency (a medium of exchange). It enables peer-to-peer transactions without the need for intermediaries such as banks or payment processors (Catalini & Gans, 2016). The first and most well-known cryptocurrency, Bitcoin, was introduced in 2009 by Nakamoto. Since then, thousands of other cryptocurrencies (e.g., Ethereum, Ripple, Litecoin) have emerged, each with unique features, governance mechanisms, and applications beyond payments, such as smart contracts and decentralized finance (De Vries, 2018). Cryptocurrencies are characterized by features such as decentralization, security, transparency and immutability. Although cryptocurrencies have gained popularity for their efficiency, anonymity, and cross-border capabilities, they also pose regulatory, security, and volatility challenges (Bhme et al, 2015). Cryptocurrency refers to a form of digital or virtual currency that uses cryptography for security, making it extremely difficult to counterfeit or double-spend. Unlike traditional currencies issued by central banks, cryptocurrencies operate on decentralized networks based on blockchain technology, which is a distributed ledger maintained by a network of companies (Nakamoto, 2008; Yermack, 2015). According to Catalini and Gans (2016), cryptocurrency is a digital token that allows value exchange over a peer-to-peer token network without relying on a trusted central

authority, with all transactions recorded on a distributed ledger. This means that individuals can send and receive payments directly, reducing the cost and time associated with traditional payment systems. In Nigeria, cryptocurrency refers to a form of digital or virtual currency that uses encryption techniques to regulate the creation of units and verify transactions, operating without a central issuing authority such as the Central Bank of Nigeria (CBN). It is primarily based on blockchain technology, which functions as a transparent and immutable ledger (Nakamoto, 2008; Nwosu & Ogu, 2021). The Central Bank of Nigeria (CBN) describes cryptocurrency as a non-fiat currency that exists only in digital form and is not issued or guaranteed by any jurisdiction. It can be traded, transferred, or stored electronically and is accepted by individuals or entities as a means of payment (CBN, 2021). In practice, cryptocurrencies in Nigeria, such as Bitcoin, Ethereum, and USDT, are widely used for cross-border remittances, online transactions, and investment speculations, and increasingly, for hedging against the volatility of the naira (Oladapo & Olayemi, 2020). Thus, cryptocurrencies represent both an innovative financial instrument and a regulatory challenge, especially in developing economies like Nigeria, where adoption is high despite official restrictions. This study utilized perceived legal risk, volatility perception index, transaction time satisfaction and peer adoption index as measures for cryptocurrency.

Concept of Financial Inclusion: Financial inclusion has been a vital challenge worldwide due to its adverse effects on the economic growth and development of any country (Tebepah, 2024a). In Africa, the story is the same, and Nigeria is not exceptional. This is because the country is full of potential for deposit money banks (DMBs), the Nigerian economy and other financial and business operators, as capital will be easily accumulated and accessed by corporate enterprises and individuals if everybody is financially included (Oluwaseun, 2017; Tebapah, 2024b)). Financial inclusion is defined as the process that includes the delivery of financial services (loans, deposits, insurance) promptly to all segments of society at appropriate costs. According to Ehiedu et al (2022), financial inclusion is a situation in society where everybody has access to banking and insurance services and products, accompanied by financial literacy and talents. As emphasised by Ozili (2022); Mgbada et al (2024), financial inclusion is defined as having easy access, availability and usage of the formal financial system products and services by all members of society. In other words, it is a policy development plan by the government and its regulatory bodies, which entails the provisions of affordability and the use of formal financial services by all people within the economy. Therefore, it is an essential tool which the government uses to stimulate economic growth due to its capacity to efficiently allocate production and assets. Tebepah (2024b) defined financial inclusion as a situation in which companies and individuals have access to and use of financial services. It also refers to the process of ensuring that individuals and businesses, especially those traditionally excluded from formal financial systems, have access to, and can effectively use, a broad range of affordable and appropriate financial products and services. These include payments, savings, credit, and insurance, all delivered responsibly and sustainably (World Bank, 2024; Cambridge University Press, 2023). Therefore, it not only reflects financial development, but also financial knowledge, and consequently, financial inclusion can provide the basis for the development of the financial system (Chuc et al, 2022). Globally, financial inclusion is recognised as a critical enabler for poverty reduction, economic growth, gender equality, entrepreneurship, and resilience to shocks such as climate change and economic crises (World Bank, 2024). In late 2024, a coalition comprising the International Monetary Fund (IMF), World

Bank, and the Bank for International Settlements (BIS) launched open finance guidelines, encouraging regulated data-sharing (with customer consent) to enable tailored financial services and deepen inclusion, particularly for women, small enterprises, and rural populations (IMF, 2024). This study used access to financial services and usage of financial services as measures of financial inclusion. Access to financial services as a dimension of financial services refers to the availability and affordability of formal financial products and delivery channels that enable individuals and businesses to participate in the financial system. It captures whether people can open and maintain a bank or mobile money account, locate and reach financial institutions, and meet requirements such as identification and minimum balances (World Bank, 2024; Sarma & Paris, 2023). According to the World Bank (2024), access to financial services refers to the availability of affordable, safe, and convenient financial products for all individuals and businesses, regardless of income level or geographic location, enabling participation in the formal financial system. Sarma and Paris (2024) define it as the ability of people to reach and afford financial products and services when needed, which depends on factors such as geographic proximity, affordability, and eligibility requirements.

Legal and Tax Implications of Cryptocurrency and Financial Inclusion

The legal implications of cryptocurrency and financial inclusion revolve around how laws, regulations, and legal frameworks shape both the opportunities and risks of using cryptocurrency as a tool to expand access to finance. The following are the breakdowns:

1. **Regulatory Uncertainty:** Many countries, including Nigeria, lack comprehensive legal frameworks for cryptocurrency. This uncertainty discourages banks, fintechs, and individuals from fully integrating crypto into financial services. In 2021, the Central Bank of Nigeria (CBN) restricted banks from facilitating crypto transactions, creating a legal barrier to financial inclusion through crypto.
2. **Consumer Protection and Legal Redress:** Without clear laws, consumers face risks from fraud, hacking, and Ponzi schemes, yet most have no legal remedies. Vulnerable groups such as unbanked, rural dwellers may be exposed to exploitation, undermining the very purpose of financial inclusion. Laws should mandate dispute resolution mechanisms, licensing of exchanges, and clear consumer protection standards.
3. **Anti-Money Laundering and Counter-Terrorism Financing:** Cryptocurrencies can facilitate anonymous transfers, raising concerns about money laundering, fraud and terrorism financing. To comply with AML/CFT, governments may impose strict know your customer rules, which could exclude low-income individuals lacking formal IDs. Laws must balance financial integrity with inclusiveness by recognizing alternative forms of digital identity.
4. **Taxation and legal Recognition:** Many jurisdictions debate whether crypto is a currency, commodity, or security, which affects taxation and usage. Unclear tax laws may discourage businesses and individuals from using crypto. It is hoped that the new harmonized tax regime recently signed into law by the President Bola Ahmed Tinubu would help reduce some perceived ambiguities. On the other hand, fair taxation policies could integrate crypto into formal economies, promoting inclusive growth.

5. **Data Privacy and Cybersecurity Laws:** Since crypto transactions rely on blockchain and digital wallets, data protection and cybersecurity laws are critical. Weak privacy and cyber laws may exposé users to hacking or surveillance, reducing trust in crypto. Strong legal protections are needed to build confidence for inclusive adoption.
6. **Legal Recognition of Digital Assets and CBDCs:** Some countries now legally recognize crypto or issue Central Bank Digital Currencies (CNDCs) such as Nigeria's eNaira. Proper legal recognition can bring legitimacy, encourage adoption, and allow governments to integrate crypto into financial inclusion strategies.
7. **Classification and Legal Status:** How crypto is legally classified (currency, commodity, property, or security) determines tax treatment. Inconsistent classification creates uncertainty for individuals and MSMEs who might benefit from crypto payments/remittances. Clear recognition and consistent tax rules lower barriers to formal participation. In Nigeria, crypto is not a legal tender, but the SEC classifies digital assets as securities, making transactions potentially taxable under the capital gains or investment laws.
8. **Capital Gains and Transaction Taxes:** Many jurisdictions apply capital gains tax on crypto sales or exchanges. For low-income earners using small crypto transfers/remittances, capital gains tax obligations may create a compliance burden, discouraging participation. Excessive taxation could push users into informal, unregulated markets, undermining both tax collection and inclusion.
9. **Indirect Taxes (VAT):** Some governments consider imposing VAT on crypto transactions or exchange services. If remittances or micro payments attract VAT, costs for low-income users rise, contradicting the low-fee advantage of crypto. Exemptions for micro-transactions could support inclusion while still taxing larger, speculative trades.
10. **Informality and Tax Evasion Risks:** Crypto transactions are often peer-to-peer and borderless, making them difficult to track. This raises fears of tax evasion and revenue leakages. Overly strict tax enforcement might block access for informal users, while tax enforcement could encourage shadow markets. The solution lies in balanced reporting requirements and simplified tax regimes for small users.
11. **Remittances and Cross-**Border Transactions: Crypto offers cheaper remittances channels, but tax policies on cross-border crypto transfers remain unclear. If government imposes withholding taxes or levy fees on inbound remittances via crypto, this could raise costs for diaspora families in places like Bayelsa State. Conversely, tax incentives on remittances processed through licensed crypto platforms could enhance inclusion.
12. **Small Businesses and MSMEs:** MSMEs in the informal sector may adopt crypto for payments, but unclear tax policies discourage them from reporting earnings. Simplified tax structure can bring MSMEs into the formal tax net, supporting both inclusion and revenue mobilization.

Theoretical Framework: This study anchored on diffusion of innovations theory and technology acceptance model.

Diffusion of Innovations Theory: The diffusion of innovations theory was popularized by Everett M. Rogers in his seminal work Diffusion of Innovations (first published in 1962, with later editions

through 2003). Rogers synthesized research from rural sociology, marketing, and communication to explain how innovations spread within a social system. Diffusion of innovations (DOI) explains how, why, and at what rate new ideas, products, or practices spread through societies or organisations. According to Rogers (2003), diffusion is communicated through certain channels over time among the members of a social system. The theory identifies five adopter categories: innovators, early adapters, early majority, late majority, and laggards, and outlines four main elements of innovation, communication channels, time and social system. DOI helps predict how different segments of a population respond to innovations (Rogers, 2003), useful in planning strategies to promote new products or technologies (Dearing & Cox, 2018), helps find opinion leaders to speed up adoption and goes beyond individual choice to include cultural and structural influences. However, this theory suffers from several criticisms such as placing responsibility for non-adoption on individuals rather than structural barriers, overlooking inequality, infrastructure, and policy adoption and sometimes oversimplifying the complex, iterative nature of adoption and rejection cycles. The DOI theory is relevant to this study because adoption of crypto reduces reliance on formal bank infrastructure, enabling low-cost, instant transactions, increases financial access for the unbanked, continued usage enhances financial participation and overtime, this diffusion expands financial inclusion at the societal level (Aysan et al, 2021).

Technology Acceptance Model: The Technology Acceptance Model (TAM) introduced by Davies (1986), explains how users come to accept and use technology. It posits that perceived usefulness and perceived ease of use are the two main beliefs influencing attitude toward use, which then shapes behavioural intention to use and ultimately actual use. This model explains the extent to which a person believes using cryptocurrency will improve their financial transactions and access to services, the extent to which a person believes cryptocurrency is free from effort to learn and use, the individual's overall affective feeling about using cryptocurrency, the motivational factor influencing a person's likelihood to adopt cryptocurrency and the real-life adoption and use of cryptocurrency for financial transactions (Davis, 1989). This model can be applied across different technologies, including emerging financial tools like cryptocurrency, it integrates external variables such as trust, risk, regulation or peer influence. However, the model suffers from the following criticism: it focuses heavily on individual beliefs, ignoring broader institutional or economic barriers, does not account for evolving user perception over time and may overlook social, cultural and regulatory influences mostly in developing countries. TAM directly addresses why people adopt or reject new technologies such as cryptocurrency. Since financial inclusion depends on individuals actively using financial tools, TAM helps explain how perceptions of usefulness influence cryptocurrency uptake. Also, TAM provides a behaviorual framework to measure how positive perceptions of crypto lead to actual usage, which in turn enhances financial inclusion (Venkatech & Davis, 2000).

Empirical Review

Table 1: Empirical Review

Author(s)/Year	Country/Scope	Methodology	Sample/Data	Key Findings
Syekl & Kamil (2024)	Nigeria, Kenya, Venezuela	Structural Equation Model (SEM)	Survey + Interviews N= 1,250	Crypto adoption significantly enhances financial inclusion ($\beta = 0.78$, $p < 0.001$); tech infrastructure moderates' relationship
MDPI (2024)	Emerging markets (Latin America, Africa, Asia)	Secondary data analysis	Chainalysis adoption index + World Bank Findex	Crypto boosts inclusion via remittances, inflation hedge, and bypassing banking barriers
Coinbase Institute (2023)	Global	Policy & market analysis	Institutional data & case studies	Crypto enables unbanked to access savings, lending, and payments using smartphones
Spatial Economics Study	Global	Spatial econometric modeling	Global crypto adoption data + IMF macroeconomic indicators	Limited banking access and unstable currencies strongly linked to higher crypto-driven inclusion
Nwosu (2021)	Lagos, Nigeria	Quantitative survey	N = 157 youths, Chi-square test	Crypto adoption positively affects inclusion; driven

				by mobile access and low fees
Guardian Nigeria (2025)	Nigeria	Journalistic analysis	Industry reports + interviews	Blockchain fintech offers loans, savings remittances to unbanked Nigerians
Milken Institute (2024)	Nigeria	Market analytics	Crypto transaction volume data	$59B in transactions; 40% stablecoins for remittances, boosting inclusion
Oladipo et al (2025)	Nigeria	Descriptive survey	Bankers, academics, traders N = 300	Regulatory bans reduced crypto adoption and slowed e-Naira inclusion impact

METHODOLOGY

Research Design: Appah (2020) described research design as the methodological connection between the philosophies and subsequent selection of data collection methods. This paper adopted cross sectional research design.

Population of the Study: Population is the entire set of individuals of interest to a researcher. Although the entire population usually does not participate in a research study, the results from the study are generalized to the entire population. The population of this study consists of the following bankers, academics and individuals with knowledge of cryptocurrency.

Sample, Sampling Technique & Sample Size: Sample is a representative subset of the population. It comprises some members selected from the population. According to Appah (2020) sampling is the process of selecting enough elements from a population to represent the properties or characteristics of that population. This study adopted nonprobability sampling technique of convenience to determine the number of individuals selected for the study. A sample size of 385 customers was derived using Cochran (1977) standard formula. According to Appah (2020), this formula was preferred for the reason that it is used for an infinite population size. The formula computation is presented as follows:

$$n = \frac{Z^2 \times P \times (1 - P)}{C^2}$$

$$= \frac{1.96\ X\ 1.96 \times 0.5 \times (1 - 0.5)}{0.052\ X\ 0.52}$$

$$= 384.16 => 385$$

Z = Z-value (e.g 1.96 for a 95% Confidence level)
P = Population proportion in percentage expressed as decimal 50% (0.5).
C = Confidence interval or margin of error allowable in the sample estimate of population which is valued to be 5% (0.05)

Sources of Data: This study used primary and secondary sources of data. The primary sources are that information collected by the researcher for his or her own purpose whereas the secondary sources are those which are made available or have been collected for other research purposes (Appah, 2020).

Instrument for Data Collection: Data collection is the method of gathering relevant information for use in addressing research questions and hypotheses testing (Appah, 2020). Data used for this study were collected from a questionnaire titled 'Legal and Tax Implications of Cryptocurrency and Financial Inclusion Questionnaire (LETOCRYFINI). The questionnaire is divided into two sections. The first section of the questionnaire provides vital personal information of the respondents while the second section consists of questions consisting of statements measuring respondents' perceptions on cryptocurrency and financial inclusion. The questionnaire was designed using a five-point Likert scale ranging from strongly agree (5) to strongly disagree (1). The study utilized financial inclusion as the measurement for dependent variable while the independent variable was cryptocurrency adopted from prior studies with some modifications. The statement used Likert-type scale of Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D), and Strongly Disagree (SD) while the respondents were required to indicate by a ticking against the option that best expressed their opinion on the association between the dependent and independent variable. A total of two hundred and seventy-eight (278) questionnaires were returned and used for data analysis.

Validity Instrument: Validity refers to the issue of whether an indicator that is devised to gauge a concept measure that concept. The validity of this study rests on an overall evaluative judgment founded on empirical evidence and theoretical rationales of adequacy, appropriateness of inferences and action based on the test scores. This study used content and face validity, where the instrument was given to academics and professionals who read through and made necessary corrections. Face validity refers to the extent to which a measure or assessment appears to measure what it claims to measure (Appah, 2020).

Reliability of Instrument: Reliability is the consistency of the measurement. According to Gravetter & Forzano (2019), reliability of a measurement procedure is the stability or consistency of the measurement. The reliability of a measure indicates the extent to which it is without bias or

error and hence ensures consistent measurement across time and the various items in the instrument. The study questionnaires were tested using test-retest reliability. The instruments were administered to twenty (20) of the target subjects who were not part of the respondents and after a period of two weeks, the same instruments again were given to the same twenty (20) respondents to ascertain reliability. Crobach Alpha (α) was used to ascertain the statistical reliability of the research instrument with a good degree of reliability as follows:

Table 2: Reliability Statistics

Construct	Number of items	Cronbach Alpha
Perceived Legal Risk (PLR)	5	0.824
Volatility Perception Index (VPI)	5	0.872
Transaction Time Satisfaction (TTS)	5	0.762
Peer Adoption Index (PAI)	5	0.856
Access to Financial Services (AFS)	5	0.743
Usage of Financial Services (UFS)	5	0.762

Source: Authors' Survey (2025)

Methods of Data Analysis: Consistent with the positive research philosophy and quantitative design, technique of inferential analysis in this study was parametric statistics. This technique was associated with the use of quantitative models that sought to establish a correlational relationship between two variables by using sample-based parameters as measures to infer about the population of the study. The data analysis was executed descriptive statistics and correlation analysis. According to Appah (2020), the interpretation of correlation (r) as the following parameters: 0.8 – 1.0 = very strong relationship, 0.6 – 0.79 = strong relationship, 0.4 – 0.59 = moderate relationship, 0.2 – 0.39 = weak relationship; and 0.0 – 0.19 = very weak or no relationship.

RESULTS AND DISCUSSIONS

A total of three hundred and eighty-five (385) copies of the questionnaire were distributed to the respondents. Out of this number, two hundred and seventy-eight (278) representing 72.2% response rates were correctly filled and returned while sixty-five (65) copies representing 16.9% were not returned. However, forty-two (42) representing 10.9% were returned but not correctly filled and therefore rejected. The implication is that the analysis of data will be based on two hundred and seventy-eight (278) representing 72.2% response rates that were returned and correctly filled.

Table 3: Questionnaire Distribution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Number returned and correctly filled	278	72.2	72.2	72.2
	Number returned and not correctly filled	42	10.9	10.9	83.1
	Number not returned	65	16.9	16.9	100.0
	Total	385	100.0	100.0	

Source: Field Survey (2025) Via **SPSS Output**

Table 4: Descriptive Statistics of Perceived Legal Risk

S/N	Items	N	Min	Max	Mean	Std. D
1	I worry that using cryptocurrency could get me into legal trouble	278	1.00	5.00	3.609	1.293
2	The legal status of cryptocurrency in my country is unclear	278	1.00	5.00	3.812	1.268
3	I am concerned that government regulations might suddenly restrict my crypto activities	278	1.00	5.00	3.609	1.365
4	Fear of legal consequences discourages me from using cryptocurrency	278	1.00	5.00	3.581	1.273
5	I believe there is a high risk of penalties for crypto-related transactions	278	1.00	5.00	3.601	1.290
Valid N (listwise)		**278**			**3.642**	**1.298**

Source: Field Survey (2025)

The results in table 4 show the descriptive statistics of the mean and standard deviation responses on perceived legal risk of questionnaire items that were designed on a five-point Likert scale. Thus, the questionnaire items labelled, and the mean and standard deviation of the five items were calculated to determine the overall mean and standard deviation responses on perceived legal risk. Notwithstanding, all the items mean are above the cut-off point of 2.5. However, the grand mean and standard deviation responses on the questionnaire items disclosed (**Mean =3.642; Std. D =1.298**) respectively. This implies that perceived legal risk is a significant predictor of financial inclusion in in Yenagoa, Bayelsa State, Nigeria.

Table 5: Volatility Perception Index

S/N	Items	N	Min	Max	Mean	Std. D
1	Cryptocurrency prices change drastically within short periods.	278	1.00	5.00	3.709	1.315
2	Price swings in crypto are longer than in traditional currencies	278	1.00	5.00	3.486	1.303
3	I can generally predict where cryptocurrency prices are heading	278	1.00	5.00	3.522	1.300
4	Cryptocurrency price movements are unpredictable	278	1.00	5.00	3.717	1.227
5	The high volatility of crypto makes it too risky to use as money	278	1.00	5.00	3.932	1.210
Valid N (listwise)		**278**			**3.673**	**1.271**

Source: Field Survey (2025)

The results in table 5 reveal the descriptive statistics of the mean and standard deviation responses on volatility perception index questionnaire items that were designed on a five-point Likert scale. Thus, the questionnaire items labelled above, and the mean and standard deviation of the five items were calculated to determine the overall mean and standard deviation responses on volatility perception index. Notwithstanding, all the items mean are above the cut-off point of 2.5. However, the grand mean and standard deviation responses on the questionnaire items disclosed (**Mean =3.673; Std. D =1.271**) respectively. This implies that volatility perception index is a significant predictor of financial inclusion in Yenagoa, Bayelsa State, Nigeria.

Table 6: Descriptive Statistics of Transaction Satisfaction

S/N	Items	N	Min	Max	Mean	Std. D
1	Cryptocurrency transactions are processed quickly	278	1.00	5.00	3.609	1.293
2	I am satisfied with the time it takes for my crypto transactions to be confirmed	278	1.00	5.00	3.812	1.268
3	Crypto payments are faster than traditional bank transfer	278	1.00	5.00	3.609	1.365
4	The speed of crypto transactions meets my expectations	278	1.00	5.00	3.581	1.273
5	I rarely experience delays in crypto transaction confirmation	278	1.00	5.00	3.601	1.290
Valid N (listwise)		**278**			**3.642**	**1.298**

Source: Field Survey (2025)

The results in table 6 depict the descriptive statistics of the mean and standard deviation responses on transaction satisfaction questionnaire items that were designed on a five-point Likert scale. Thus, the questionnaire items labelled above, and the mean and standard deviation of the five items were calculated to determine the overall mean and standard deviation responses on transaction satisfaction. Notwithstanding, all the items mean are above the cut-off point of 2.5. However, the grand mean and standard deviation responses on the questionnaire items disclosed (**Mean =3.642; Std. D =1.298**) respectively. This implies that transaction satisfaction is a significant predictor of financial inclusion in selected hotels in Yenagoa, Bayelsa State, Nigeria.

Table 7: Descriptive Statistics of Peer Adoption Index

S/N	Items	N	Min	Max	Mean	Std. D
1	Many of my friends or colleagues use cryptocurrency	278	1.00	5.00	3.709	1.315
2	I often discuss cryptocurrency with my friends, family, or colleagues	278	1.00	5.00	3.486	1.303
3	People around me encourages me to use cryptocurrency	278	1.00	5.00	3.522	1.300
4	I feel more confident using cryptocurrency because my peers use it	278	1.00	5.00	3.717	1.227
5	Seeing my peers sue cryptocurrency increases my willingness to use it.	278	1.00	5.00	3.932	1.210
Valid N (listwise)		**278**			**3.664**	**1.271**

Source: Field Survey (2025)

The results in table 7 depict the descriptive statistics of the mean and standard deviation responses on peer adoption index using five questionnaire items that were designed on a five-point Likert scale. Thus, the questionnaire labelled above, and the mean and standard deviation of the five items were calculated to determine the overall mean and standard deviation responses on peer adoption index. Notwithstanding, all the items mean are above the cut-off point of 2.5. However, the grand mean and standard deviation responses on the questionnaire items disclosed (**Mean =3.664; Std. D =1.271**) respectively. This implies that o peer adoption index is a significant predictor of financial inclusion in Yenagoa, Bayelsa State, Nigeria.

Table 8: Descriptive Statistics of Access to Financial Services

S/N	Items	N	Min	Max	Mean	Std. D
1	I have a bank account or mobile money account in my name	278	1.00	5.00	3.609	1.293
2	There is a financial service provider (bank, microfinance, POS agent) within walking distance from my home or workplace	278	1.00	5.00	3.812	1.268
3	I can easily obtain information about the requirements to open an account	278	1.00	5.00	3.609	1.365
4	The cost of opening a bank or mobile money account is affordable for me.	278	1.00	5.00	3.581	1.273
5	I have the necessary identification (e.g., NIN, voter's card) to access financial services.	278	1.00	5.00	3.601	1.290
Valid N (listwise)		**241**			**3.642**	**1.298**

Source: Field Survey (2025)

The results in table 8 presented the descriptive statistics of the mean and standard deviation responses on access to financial services items that were designed on a five-point Likert scale. Thus, the questionnaire items labelled above, and the mean and standard deviation of the five items were calculated to determine the overall mean and standard deviation responses on access to financial services. Notwithstanding, all the items mean are above the cut-off point of 2.5. However, the grand mean and standard deviation responses on the questionnaire items disclosed (**Mean =3.642; Std. D =1.298**) respectively.

Table 9: Descriptive Statistics of Usage of Financial Services

S/N	Items	N	Min	Max	Mean	Std. D
1	I frequently use my bank or mobile money account for deposits and withdrawals.	278	1.00	5.00	3.6096	1.30803
2	I regularly make electronic payments (e.g., bills, transfers) instead of using cash.	278	1.00	5.00	3.7410	1.31783
3	I have used digital channels (e.g., mobile banking, USSD) in the last three months	278	1.00	5.00	3.7729	1.37994
4	I save money regularly using formal financial services	278	1.00	5.00	3.6614	1.20036
5	I have accessed credit or loans from formal financial institutions in the past year.	278	1.00	5.00	3.4701	1.27832
Valid N (listwise)		**278**			**3.651**	**1.2969**

Source: Field Survey (2025)

The results in table 9 reveal the descriptive statistics of the mean and standard deviation responses on usage of financial services questionnaire items that were designed on a five-point Likert scale. Thus, the questionnaire items labelled above and the mean and standard deviation of the five items were calculated to determine the overall mean and standard deviation responses on emotional usage of financial services. Notwithstanding, all the items mean are above the cut-off point of 2.5. However, the grand mean and standard deviation responses on the questionnaire items disclosed (**Mean =3.651; Std. D =1.2969**) respectively.

Table 10: Correlation Matrix of Cryptocurrency and Access to Financial Services

		AFS	PLR	VPI	TTS	PAI
AFS	Pearson Correlation	1				
	Sig. (2-tailed)	.000				
	N	278				
PLR	Pearson Correlation	.611**	1			
	Sig. (2-tailed)	.000	.000			
	N	278	278			
VPI	Pearson Correlation	.678**	.822**	1		
	Sig. (2-tailed)	.000	.000	.000		
	N	278	278	278		
TTS	Pearson Correlation	.715**	.109**	.083*	1	
	Sig. (2-tailed)	.000	.001	.015	.000	
	N	278	278	278	278	
PAI	Pearson Correlation	.709**	.886**	.941**	.048	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000
	N	278	278	278	278	278

Source: Computed by Researcher's Via SPSS (2025)

Table 10 shows the Pearson Product Moment Correlation Coefficient (PPMC) analysis of the relationship between pear perceived legal risk (PLR), volatility perception (VPI), transaction time satisfaction (TTS), and peer adoption index (PAI) on access to financial services (AFS). The table shows a strong and positive relationship (r = 0.611, P = 0.00) between perceived legal risk (PLR) and access to financial services (AFS) in Yenagoa, Bayelsa State, Nigeria; a strong and positive (r = 0.678, P = 0.000) between volatility perception index (VPI) and access to financial services (AFS) in Yenagoa, Bayelsa State, Nigeria; a strong and positive (r = 0.715. P = 0.000) between transaction time satisfaction (TTS) and access to financial services (ATF) in Yenagoa, Bayelsa State, Nigeria; and a strong and positive (r = 0.709, P = 0.000) between peer adoption index (PAI) and access to financial services (AFS) in Yenagoa, Bayelsa State, Nigeria. The findings therefore disclosed a strong and positive relationship between cryptocurrency and financial inclusion in Yenagoa, Bayelsa State, Nigeria.

Table 1I: Correlation Matrix of Cryptocurrency and Access to Financial Services

		UFS	PLR	VPI	TTS	PAI
UFS	Pearson Correlation	1				
	Sig. (2-tailed)	.000				
	N	278				
PLR	Pearson Correlation	.643**	1			
	Sig. (2-tailed)	.000	.000			
	N	278	278			
VPI	Pearson Correlation	.647**	.822**	1		
	Sig. (2-tailed)	.000	.000	.000		
	N	278	278	278		
TTS	Pearson Correlation	.735**	.109**	.083*	1	
	Sig. (2-tailed)	.000	.001	.015	.000	
	N	278	278	278	278	
PAI	Pearson Correlation	.638**	.886**	.941**	.048	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000
	N	278	278	278	278	278

Source: Computed by Researcher's Via SPSS (2025)

Table 10 shows the Pearson Product Moment Correlation Coefficient (PPMC) analysis of the relationship between pear perceived legal risk (PLR), volatility perception (VPI), transaction time satisfaction (TTS), and peer adoption index (PAI) on usage to financial services (UFS). The table shows a strong and positive relationship (r = 0.643, P = 0.00) between perceived legal risk (PLR) and usage to financial services (UFS) in Yenagoa, Bayelsa State, Nigeria; a strong and positive (r = 0.647, P = 0.000) between volatility perception index (VPI) and usage to financial services (UFS) in Yenagoa, Bayelsa State, Nigeria; a strong and positive (r = 0.735. P = 0.000) between transaction time satisfaction (TTS) and usage to financial services (UFS) in Yenagoa, Bayelsa State, Nigeria; and a strong and positive (r = 0.638, P = 0.000) between peer adoption index (PAI) and usage to financial services (UFS) in Yenagoa, Bayelsa State, Nigeria. The findings therefore disclosed a strong and positive relationship between cryptocurrency and financial inclusion in Yenagoa, Bayelsa State, Nigeria.

DISCUSSION OF FINDINGS

Perceived Legal Risk and Financial Inclusion: The result from hypothesis testing showed a strong and positive relationship between perceived legal risk (PLR) and financial inclusion in Yenagoa, Bayelsa State, Nigeria. The finding from this study concurs with the investigation conducted by Nwosu (2021) on cryptocurrency adoption on financial inclusion among Nigerian Youths. The findings of the study suggested a significant positive effect of cryptocurrency usage on financial inclusion among Nigerian youths. The study result is also in line with the studies carried out by Syeki and Kamil (2025) on cryptocurrency technology and financial inclusion and economic sustainability in developing countries. The findings of the study disclosed that cryptocurrency adoption was found to significantly enhance financial inclusion and economic

sustainability across Kenya, Venezuela and Nigeria. Additionally, El Hajj and Farran (2024) investigation of cryptocurrency adoption in emerging markets and financial inclusion disclosed that cryptocurrency adoption had a strong positive impact on financial inclusion and that cryptocurrency adoption also enhances economic empowerment positively. The study was found to increase individuals' financial autonomy, investment opportunities, and perceived control over funds. Consequently, this study concludes that the adoption of cryptocurrency enhances the level of financial inclusion through the access and usage of financial services in Yenagoa, Bayelsa State, Nigeria.

Volatility Perception Index and Financial Inclusion

The result from hypothesis testing suggested a strong and positive linkage between volatility perception index and financial inclusion in Yenagoa, Bayelsa State, Nigeria. The outcome of this investigation agrees with the study carried out by Nwosu (2021) that cryptocurrency adoption on Nigerian youths enhances financial inclusion. The result of the study disclosed a significant positive effect of cryptocurrency adoption on financial inclusion of youths in Nigeria. Also, the study result is consistent with the investigation conducted by Syeki and Kamil (2025) on cryptocurrency technology and financial inclusion and economic sustainability in developing countries. The outcome of the study revealed that cryptocurrency adoption was found to significantly improve financial inclusion and economic sustainability across Kenya, Venezuela and Nigeria. Furthermore, El Hajj and Farran (2024) investigation of cryptocurrency adoption in emerging markets and financial inclusion and that cryptocurrency adoption had a strong positive influence on financial inclusion and that cryptocurrency adoption also boosts economic empowerment positively. The study suggested that cryptocurrency usage increases individuals' financial autonomy, investment opportunities, and perceived control over funds. Accordingly, this study concludes that the adoption of cryptocurrency increases the level of financial inclusion through the access and usage of financial services in Yenagoa, Bayelsa State, Nigeria

Transaction Time Satisfaction and Financial Inclusion

The outcome from the hypothesis testing indicated a strong and positive connection between transaction time satisfaction and financial inclusion in Yenagoa, Bayelsa State, Nigeria. The result from this study is in line with the research carried out by Nwosu (2021) on cryptocurrency adoption on financial inclusion among youths in Nigeria. The result of the study advocated a significant positive influence of cryptocurrency usage on financial inclusion in Nigeria. The study outcome is also consistent with the investigation conducted by Syeki and Kamil (2025) on cryptocurrency technology and financial inclusion and economic sustainability in developing countries. The findings of the study showed that cryptocurrency adoption was found to significantly improve financial inclusion and economic sustainability across Kenya, Venezuela and Nigeria. Moreover, El Hajj and Farran (2024) research of cryptocurrency adoption in emerging markets and financial inclusion disclosed that cryptocurrency adoption had a strong positive impact on financial inclusion. The findings revealed that cryptocurrency adoption also improves economic empowerment positively. The study was found to increase individuals' financial autonomy, investment opportunities, and perceived control over funds. Therefore, this study concludes that

the adoption of cryptocurrency improves the level of financial inclusion through the access and usage of financial services in Yenagoa, Bayelsa State, Nigeria.

Peer Adoption Index and Financial Inclusion

The result from hypothesis testing revealed a strong and positive association between peer adoption index and financial inclusion in Yenagoa, Bayelsa State, Nigeria. The finding from this study corresponds with the examination conducted by Nwosu (2021) on cryptocurrency adoption on financial inclusion among youths in Nigeria. The result of the study proposed a significant positive influence on cryptocurrency adoption on financial inclusion among youths in Nigeria. The result from the investigation is also consistent with the research conducted by Syeki and Kamil (2025) on cryptocurrency technology adoption and financial inclusion and economic sustainability in developing countries. The findings of the study showed that cryptocurrency adoption was found to significantly influence financial inclusion and economic sustainability across Kenya, Venezuela and Nigeria. Also, El Hajj and Farran (2024) investigation of cryptocurrency adoption in emerging markets and financial inclusion suggested that cryptocurrency adoption had a strong positive effect on financial inclusion and that cryptocurrency adoption also influences economic empowerment positively. The study was found to improve individuals' financial autonomy, investment opportunities, and perceived control over funds. Accordingly, this study concludes that the adoption of cryptocurrency improves the level of financial inclusion through the access and usage of financial services in Yenagoa, Bayelsa State, Nigeria.

Conclusion, Policy Implications, Limitations of the Study and Further Research

This study investigated the legal and tax implications of cryptocurrency and financial inclusion in Yenagoa, Bayelsa State, Nigeria. The study anchored on Diffusion of Innovation (DOI) theory and technology adoption model. The study used survey research design with a population consisting of bankers, academics and individuals with knowledge of cryptocurrency and nonprobability sampling technique of convenience was employed to determine the number of individuals selected for the study with a sample size of 385 customers was derived using Cochran standard formula. Also face and content validity was utilised, and Cronbach was used to determine the reliability of instrument with questionnaire as the primary instrument of data collection. The responses from the questionnaire were analysed using univariate and bivariate analysis with the Pearson Moment Correlation Coefficient (PMCC) suggested a significantly positive association between perceived legal risk (PLR) of cryptocurrency, volatility perception index (VPI) of cryptocurrency, transaction time satisfaction (TTS) of cryptocurrency and peer adoption index (PAI) of cryptocurrency on financial inclusion (access and usage of financial services). Hence the study concluded that cryptocurrency adoption influences the access and usage of financial services of financial inclusion.

The policy implications of the association between cryptocurrency and financial inclusion are: Since

1. Cryptocurrency adoption has the potential to increase access to financial services for the unbanked and underbanked, policymakers may need to integrate crypto solutions into national financial inclusion strategies. Therefore, the Central Bank of Nigeria (CBN) and regulators should consider frameworks that recognise cryptocurrencies and blockchain based services as complementary tools to traditional banking.
2. Many potential users in emerging countries remain digitally illiterate, limiting their ability to safely use cryptocurrencies for financial inclusion. Hence, public institutions should implement digital and financial literacy programs to assist citizens understand how to use crypto wallets, manage private keys, and identify scams.
3. The growth of cryptocurrency adoption highlights the demand for digital, borderless, and low-cost financial systems. Hence, the Central Bank of Nigeria (CBN) may accelerate the development of CBDCs that combine innovation of blockchain with state-backed trust to foster financial inclusion.
4. Cryptocurrency adoption for financial inclusion cannot succeed without collaboration between governments, fintech companies, and traditional financial institutions. Consequently, governments should incentivize innovation, sandboxes and policy projects, allowing fintech startups to test crypto-based financial inclusion products under regulatory oversight.
5. Crypto adoption opens new avenues for economic activity but also challenges traditional taxation systems. Thus, policymakers should design crypto taxation policies that ensure government revenue without discouraging adoption, thereby supporting inclusive economic growth.

The study presented significant and insightful findings, but with limitations. The study is limited to Yenagoa, Bayelsa State, Nigeria and may not reflect the realities of other parts of Nigeria or sub-Saharan Africa where levels of digital infrastructure, financial inclusion, and cryptocurrency adoption differ significantly. Hence, this reduces the generalizability of the findings. Secondly, many residents of Yenagoa may have low financial literacy, which could affect their understanding of cryptocurrency and its role in financial inclusion. Therefore, responses from participants might thus reflect misconceptions or partial knowledge rather than real adoption experiences. The study relied on self-reported questionnaires, which are subject to biases such as exaggeration, underreporting, or giving socially desirable answers. This can affect the accuracy of the data on crypto usage and financial inclusion. Due to constraint of accessibility, the sample size may be relatively small and not fully representative of the population of Yenagoa. Hence, certain groups were underrepresented leading to sampling bias.

Following the limitations of this study, the following recommendations are provided for further research:

1. Further research should expand beyond Yenagoa to include other urban and rural areas in Bayelsa State and across Nigeria. A comparative study between regions with varying levels of infrastructure, education, and economic activity would provide richer insights into how cryptocurrency adoptions affect financial inclusion differently.

2. Subsequent research should employ a larger and more representative sample that captures diverse groups (youths, women, rural dwellers, low-income earners, and the elderly. This would improve generalizability and reduce bias in the findings.
3. A cross-sectional design only captures the situation at a single point in time. Further research should adopt longitudinal approaches to track how cryptocurrency adoption influences financial inclusion over several years, especially as government policies and technologies evolve.
4. While surveys provide quantitative data, incorporating qualitative methods such as interview, focus groups, and case studies can capture deeper insights into people's perceptions, motivations, and challenges in using cryptocurrencies for financial transactions.
5. Researchers should examine how government regulations, CBN policies, and global frameworks shape cryptocurrency adoption in Nigeria. This will help policymakers understand the balance between promoting innovation and safeguarding financial stability.

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