

Determinants of Crypto Currency Adoption among ICT/Tech Businesses in Uyo City, Nigeria

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Abstract

Existing literature shows that businesses adopt cryptocurrency transactions due to factors such as transaction speed, low transaction costs, transaction security, and high returns on investment. This research investigates the determinants of cryptocurrency adoption in Nigeria, taking into account the factors identified in the literature. To achieve the research objectives, three research objectives and three hypotheses were formulated to guide the study. An ex-post facto research design was adopted for the study. The population of the study consisted of all 1,200 owners of ICT businesses in Uyo local government Area of Akwa Ibom State, from which 10% (120) were purposefully selected to constitute the sample size of the study. The Cryptocurrency Adoption Questionnaire (CAQ) was used to collect data from the selected sample. The collected data was analyzed using Logit regression, correlation analysis, and descriptive statistics. All the independent variables - cryptocurrency Security Index (CSI), Transaction cost Index (TCI), Value Stability Index (VSI) - exhibited a significant impact on Cryptocurrency Adoption (CCA). Based on the findings, the study recommends, among other things, that there should be regulations on the operation of cryptocurrency by the government through the monetary authority to ensure that the inventors of the platforms can be traced in order to enforce recovery in case of default.

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1. Introduction

Over the years, technological advancements have led to significant transformations that have influenced our societal, economic, and political spheres. In terms of the global financial system, there has been a notable evolution from traditional barter systems to the prevalent use of fiat currencies. Fiat currencies offer numerous benefits, including the absence of the need for physical commodity reserves, the ability for countries to manage their money supply, and the establishment of a floating exchange rate system for constant valuation. Governments are generally entrusted with the role of overseeing and regulating transactions to ensure fairness, accuracy, and the prevention of manipulation (Ekong et al, 2021).

The rise of the internet and the expanding user base have propelled the digitalization of money. Most nations have electronic payment infrastructures in place, along with mobile money platforms that facilitate seamless money transfers between individuals and businesses through mobile devices. Payment card systems like MasterCard and Visa enable electronic fund transfers, while remittance services such as Western Union facilitate cross-border electronic money transfers. Platforms like PayPal, Payeer, and Payoneer facilitate currency exchanges between individuals and businesses across multiple countries (Evans, 2014). Online businesses heavily rely on these payment systems to conduct their operations efficiently.

In the present era of advanced computing and interconnected systems, a new form of currency and payment mechanism known as cryptocurrencies has emerged, driven by innovative distributed ledger technology called blockchain. The advent of cryptocurrencies poses a significant challenge to the traditional monetary system as it advocates for reducing the influence and potentially eliminating the necessity of central monetary authorities in online transactions. According to [Nakamoto \(2009\)](#), the founder of bitcoin, the pioneering cryptocurrency, bitcoin functions as a decentralized electronic cash system that enables online payments to be made directly between parties without the need for a financial intermediary. Consequently, a multitude of cryptocurrencies have been introduced, with more continually emerging. Prominent cryptocurrencies include Bitcoin (BTC), Ethereum (ETH), Ripple (XRP), Litecoin (LTC), Dash (DASH), and Dogecoin (DOGE).

Research indicates that numerous prominent ICT firms, online retailers, and businesses worldwide accept major cryptocurrencies as a legitimate form of payment ([LeBlanc, 2016](#)). Companies such as Google, Microsoft, Wikipedia, Amazon, Virgin Airlines, Lions Gate Firms, Dell, and KFC Canada are among the notable entities embracing cryptocurrency payments. Furthermore, financial institutions like Visa and MasterCard have also shown interest in investing in cryptocurrencies ([Heilman and Rauchs, 2017](#)). The adoption of cryptocurrencies as a payment method by leading ICT companies like Google and Microsoft is likely to spur further acceptance of cryptocurrencies among various ICT businesses globally, particularly in developing economies like Nigeria. This underscores the importance of studying the factors influencing cryptocurrency adoption in Nigeria.

1.2 Statement of the problem

Events in the realm of commerce indicate that cryptocurrencies are no longer viewed as obscure novelties ([Heilman and Rauchs, 2017](#)). The utilization of cryptocurrencies enables both individuals and businesses to conduct financial transactions without depending on traditional banking systems. Cryptocurrencies, which operate on a decentralized framework, empower ICT enterprises to engage in cross-border transactions without the involvement of intermediary financial entities. The demand for cryptocurrencies has surged significantly, leading to an unparalleled surge in their value. Notably, in the first half of 2022, the market value of bitcoin fluctuated between \$19,000 and \$50,000. The COVID-19 pandemic has been identified as a catalyst for digital transformation, resulting in a substantial rise in digital payments, e-commerce, and the utilization of cryptocurrencies ([Alfonso et al., 2021](#); [Auer et al., 2023](#)).

Given the recent surge in popularity of cryptocurrencies, there is a prevailing curiosity regarding their nature and functionality; investors are deliberating on whether or not to venture into this emerging asset class, while governments are contemplating regulatory measures to address the potential disruptive impact of cryptocurrencies. Similar to any investment in a novel technology, various aspects must be evaluated to gauge their future prospects. To make well-informed decisions, one must delve into the origins of the technology, as well as its conceivable applications and limitations in the foreseeable future. The advent of cryptocurrencies, akin to many revolutionary innovations, has elicited diverse reactions from individuals, businesses, and governments globally. Nonetheless, beneath these divergent perspectives lies a prevalent confusion regarding the essence and mechanisms of cryptocurrencies. Hence, a study on cryptocurrencies is expected to evoke considerable interest among all economic stakeholders.

It is imperative to comprehend the repercussions of cryptocurrencies on the operations of economic entities, particularly because the fundamental characteristic of anything functioning as money is its acceptability, and it is the impact on economic operations that drives such acceptability. The emergence of cryptocurrencies has engendered contrasting expert opinions on the operations and future trajectory of the global monetary system, with firms, individuals, and governments contemplating the forthcoming ramifications of cryptocurrency technology. However, empirical literature on this subject remains scarce. Consequently, this study aims to shed light on this seemingly contentious domain. The discourse and empirical findings of this research endeavor will serve as a valuable contribution to existing scholarship, offering insights into the future of cryptocurrency in Nigeria.

1.3 Objectives of the Study

The main objective of this study is to examine the determinants of Crypto Currency Adoption Among ICT/Tech Businesses in Uyo.

It specifically seeks to;

1. Examine the impact of crypto currency security index on crypto currency adoption among ICT/Tech firms
2. Determine the impact of Transaction cost Index on crypto currency adoption among ICT businesses in Uyo.
3. Ascertain the impact of Value Stability Index on cryptocurrency adoption among ICT businesses in Uyo.

The rest of this paper is structured as follows: review of related literature is treated in section two; section three covers research methodology; empirical findings are covered in section four; while section five covers summary, conclusion, and recommendations

2. Literature review

2.1. Theoretical Literature

The concept of the Festival of the Commons, as opposed to the Tragedy of the Commons, is based on the economic theory that shared public goods can be enhanced rather than depleted through collective use. Initially referred to as the "comedy of the commons" by [Rose \(1986\)](#), it was later renamed the Festival of the Commons. This theory pertains to public goods like knowledge, where increased participation in knowledge acquisition leads to overall improvement in knowledge for the benefit of all.

Cryptocurrencies, utilizing open-source technology, exemplify the Festival of the Commons by involving shared investment in system infrastructure and innovation. This collective participation results in an increase in the value of these common currencies. Unlike traditional national currencies confined within borders, cryptocurrencies are global and easily accessible to individuals across the networked global society, as noted by [Antonopoulos \(2015\)](#).

Benefits stemming from this concept include reduced transaction costs, faster transaction speeds, decreased check fraud expenses, and the capacity for limitless and anonymous transactions. For example, [Hayes \(2016\)](#) illustrated that a \$100 credit card transaction incurs a cost of \$3.37, while a similar Bitcoin transaction costs only \$0.61, making credit card transactions 5.5 times more costly. [Naware \(2016\)](#) highlighted that the cryptocurrency system treats local and international transactions equally, exempting them from interest and exchange rate charges. Moreover, crypto payments are confirmed within 10 to 30 minutes, compared to banks which may take days to confirm significant online transactions ([Seaman, 2014](#)).

However, critics have raised concerns regarding the potential demise of the festival due to the identified shortcomings of the crypto currency system. These include an uptick in illicit transactions, absence of governmental oversight, and significant price fluctuations. As noted by [Douman \(2016\)](#), the presence of anonymity in the crypto currency system enables large-scale underground transactions. It is worth mentioning that the surge in ponzi schemes aligns with the growing popularity of crypto currencies. [Osterrieder et al \(2018\)](#) highlighted that individuals could experience fluctuations of more than 10% every 20 days when trading crypto currencies, attributed to the absence of tangible asset backing. Moreover, the lack of regulatory frameworks has instilled notable apprehension among potential users regarding the system's reliability and sustainability. Additionally, a system that aims to diminish the monetary control of nations might not be appealing to authorities.

Novel frameworks for the functioning of the crypto currency system have emerged and have been under development in recent years ([Gupta, Lauppe, and Ravishankar 2017](#)). The prevalent proposals involve centralizing crypto currencies in contrast to the existing decentralized model and securing them with tangible assets like gold. Numerous central banks worldwide have delved into the crypto currency craze by revealing their exploration and experimentation with blockchain technology, thus garnering significant attention towards the potential for central bank-backed crypto currencies.

2.2. Empirical Literatures Review

Research on crypto currencies is still in its nascent stages. Scholars are eager to examine the impact of cryptocurrency transactions on businesses and other economic entities. A scrutiny of available literature on this topic unveils the following findings; [McWilliams, Niculescu-Marcu, and Cruz \(2018\)](#) scrutinized the economic implications of smart ledger technologies on global trade, particularly focusing on crypto currency technologies. By utilizing world trade data, they projected the potential benefits of smart ledger technologies on global trade, suggesting a boost of \$35 billion annually, a decrease of \$46 in the cost of importing a single container, and an increase of \$10 to \$20 billion in the world GDP, leading to a demand for 450,000 to 900,000 laborers worldwide. They further posited that these technologies could mitigate the repercussions of Brexit on the UK and the EU, as well as counteract President Trump's protectionist trade policies.

[Daugherty, Trkla, and Janas \(2018\)](#), as part of the Foley blockchain task force, conducted a study that examined the perspectives of businesses and investors on key issues within the cryptocurrency industry, such as regulations and security. Their research disclosed that 58% of respondents oppose the idea of central banks exercising control over cryptocurrencies, while 89% advocate for a structured self-regulatory framework within the cryptocurrency system. Additionally, less than 30% perceive the system as vulnerable to security risks, and 58% are open to undertaking legal and security risks for investments in cryptocurrencies or the development of cryptocurrency-related ventures.

[Henry, Huynh, and Nicholls \(2017\)](#) undertook a survey in Canada to assess awareness of cryptocurrency, particularly focusing on bitcoin. Utilizing the bitcoin Omnibus Survey (BTCOS), they investigated the prevalence and utilization of bitcoin in Canada, along with the motivations behind its usage. Employing logit regression analysis, they discovered that approximately 64% of Canadians are familiar with bitcoin, yet only 2.9% possess it. Their findings also indicated that 29%

of businesses and individuals owning bitcoin did so out of interest in new technology, 11% to 14% for seamless international transactions, transaction convenience, and high investment returns, 7% for fraud prevention, and another 7% for the ability to engage in anonymous transactions. Moreover, their study revealed that awareness of bitcoin was more pronounced among men and those with higher education levels, particularly individuals not employed full-time, whereas bitcoin ownership was associated with younger age groups and individuals with a high school education. They established a positive correlation between understanding bitcoin technology and its adoption.

The [ING international survey \(2018\)](#) conducted across Europe, the USA, and Australia, encompassing 15 countries with a sample size of 1000 per country, revealed that 66% of individuals in these regions are aware of bitcoin, the most recognized cryptocurrency, with 9% presently owning it and 25% intending to acquire it in the future. A notable 35% believe that cryptocurrencies will shape the future of online payments. Ownership of cryptocurrencies was more prevalent among men and younger individuals. Furthermore, over 60% considered traditional assets like cash, gold, real estate, stocks, and government bonds to be less risky than bitcoin, while more than 15% viewed them as equally risky, and over 25% perceived them as riskier than bitcoin. The ING international survey, conducted periodically, aims to enhance comprehension of global attitudes towards saving, investing, and financial sentiments.

In 2017, [Puneet, Deepika, and Kaur](#) conducted research on the crypto currency industry's trends, perspectives, and challenges. They conducted a survey of several ICT companies. Their research shows that the top cryptocurrency, bitcoin, has been approved for payments by major technology companies worldwide like WordPress, Microsoft, Dell, Google, and Internet Archive. This indicates that the adoption of crypto currencies by ICT business operators is likely to be extensive since many small ICT companies globally rely on the products of these top ICT companies.

[Baumann and Lesoimeir \(2017\)](#) researched the forecast of digital currencies for 2018. It was highlighted that bitcoin was the top searched word on google in 2017. They also indicate that crypto currencies rank as the fourth largest financial bubble in history, following the Dotcom bubble, the US great recession, and the Japan asset bubble. They also mentioned that in 2017, cryptocurrency accounted for 0.67% of the assets under management by the top 400 asset managers, while crypto assets made up just 0.58% of the worldwide stock market. They foresaw a more positive future for cryptocurrencies in 2018 and beyond, comparing it to the rise of the internet in the early 1990s.

[Hileman and Rauchs \(2017\)](#) conducted a study comparing various cryptocurrencies. They conducted a methodical examination of the cryptocurrency sector through the gathering of empirical evidence. They collected information from almost 150 cryptocurrency entities and individuals across 38 countries and five global regions in their research. Participants in the study mentioned trading cryptocurrency with 42 different national currencies, with 53% of exchanges accepting currencies beyond the five global reserve currencies. Their research shows that 79% of payment companies already have connections with banks and payment networks, with the primary challenge being the struggle of establishing and sustaining these relationships. Typically, national-to-crypto currency transactions make up 66% of overall company transactions, while national-to-national transfers and crypto-to-crypto payments represent 27% and 6%, respectively.

[Spengelink \(2016\)](#) analyzed the factors that impact the acceptance of cryptocurrencies in the Netherlands as seen by various stakeholders. The employees of the four largest Dutch banks, the Dutch Central Bank, the three top Dutch crypto currency exchanges, senior payments consultants, Payment Service Providers, cryptography experts, and the biggest Dutch company that accepts crypto currency, [Thuisbezorgd.nl](#), were all surveyed. Their results indicate that minimal transaction fees, quick international transactions, some level of privacy, and minimal obstacles for new participants all contribute to the simplicity of individuals joining the cryptocurrency ecosystem as either consumers or merchants. He also pointed out that price volatility and the blockchain governance system are reasons why people are hesitant about using cryptocurrencies.

[Sovbetov \(2018\)](#) investigated the factors affecting the prices of various cryptocurrencies such as Bitcoin, Ethereum, Dash, Litecoin, and Monero between 2010 and 2018, using the ARDL technique on weekly data. He created an index by selecting the top 50 cryptocurrency coins with weights proportional to their market capitalization. Therefore, he analyzes several crypto market factors like overall market capitalization, trading volume, and volatility and includes them as explanatory variables for crypto coin price changes along with control variables like stock market trends, gold prices, and interest rates. He discovered a mild negative effect extending from stock markets to the cryptocurrency market, specifically Bitcoin, among other things. Error-correction models indicate that Bitcoin, Etherem, Dash, Litcoin, and Monero must stay close together and eventually reach a stable equilibrium at rates of 23.68%, 12.76%, 10.20%, 22.91%, and 14.27% correspondingly.

[Anyfantaki, Arvanitis, and Topaloglou \(2018\)](#) examined how much diversification benefits are offered to investors by crypto currencies. They employed a random spanning technique to create the best portfolios with and without crypto currencies and assess their relative effectiveness. Research shows that investors are increasing their investments in cryptocurrencies at a faster rate compared to traditional assets like stocks, bonds, and cash due to the potential benefits

of diversification. This offers improved investment options for certain investors who are averse to risk. Their research also indicates that the daily average performance of cryptocurrencies surpasses that of stocks and bonds. The research highlights return on investment as a key factor in determining ownership of cryptocurrency.

In Nigeria, a number of studies have been conducted in recent times about the impact of cryptocurrencies on the Nigerian economy. Acho (2021) and Gandolph et al (2021) in their studies indicates that the use of cryptocurrency for transaction in Nigeria is growing despite the risk and uncertainties associated with it. Individuals and firms are attracted by transaction speed and low transaction cost associated with the use of cryptocurrencies. The increased use of crypto currencies compelled many countries including Nigeria to consider issuing centralized digital currencies or what is popularly known as central bank digital currencies. In Nigeria commercial banks were prohibited from carrying out transactions using cryptocurrencies and within a short while the eNaira which is the digital version of the Nigerian currency was introduced. The use of cryptocurrencies has continued to gather momentum in Nigeria. The future of cryptocurrencies is still relatively uncertain and hence the need for more research to reveal the impact and prospect of using cryptocurrencies.

2.3. Summary of Literature

Most research in the literature has concentrated on the motivations behind owning cryptocurrencies. Research indicates that leading ICT companies have embraced bitcoin for transactions due to benefits like reduced transaction fees, fast transactions, and other advantages. In this study, the determinants of cryptocurrency adoption will be examined in the light of these identified factors (low transaction cost, transaction security, transaction speed, return on investment, potential impact). While no study was found that linked cryptocurrency adoption to business performance. The COVID 19 pandemic have also brought new dimension into the digital world. This will also be taken into consideration in this study. This study will fill these identified gaps.

3. Methodology

3.1. Research Design

This research utilized an ex-post facto research design to analyze the factors influencing the adoption of Crypto Currency among ICT/Tech businesses in Uyo. The reason for selecting the ex-post facto research design is due to the fact that the study is conducted after the event, utilizing data from secondary sources. Moreover, ex post facto research design is commonly used when examining hypotheses regarding cause-and-effect relationships, ensuring the researcher has not had prior influence on the research data.

3.2. Area of Study

Uyo, located in southern Nigeria, is the capital city of Akwa Ibom, a small state in the Nigerian Federation. Uyo holds the highest population in the state and is bustling with academic, commercial, and public administrative functions. According to Wikipedia in 2018, the city's population was reported as 427,873 in the most recent census conducted in 2006. In comparison to major cities in Europe and America, Uyo is considered underdeveloped. Nonetheless, the residents can avail of electricity and telecommunication services. Telecommunication companies supply internet services to individuals, businesses, and the government that utilize the offerings of Microsoft, Google, WordPress, and other large ICT companies, with crypto currency emerging as a popular topic among residents.

3.3. Population of the Study

This study focuses on all 1,200 ICT businesses in Uyo local government Area of Akwa Ibom State that have a robust online presence and conduct transactions over the internet. Examples of such enterprises comprise software developers, web developers, bloggers, and online stores, among others.

3.4. Sample of the Study

The sample size of the study comprised of 120 ICT businesses with strong internet presence in Uyo local government Area of Akwa Ibom State who are into crypto currency transactions Which is 10% of the study population.

3.5. Instrument of Data Collection

The primary research instrument used in the study was a structured questionnaire. This was meant to ensure objectivity in obtaining data from each respondent. Interviews of business owners was also conducted.

3.6. Analytical Techniques

Data collected for this study was analysed using descriptive statistics, logit regression and spearman correlation analysis. Content analysis of interview responses was also carried out.

3.7. Model Specification

Logit regression which as one of the analytical techniques that was used to investigate the determinants of crypto currency

adoption among ICT businesses is explained and specified as follows;

Logit Regression is a statistical model used to analyze the factors influencing the presence or absence of a particular event through probabilities. It is utilized when the outcome variable is binary, which is often the scenario when there are only two possible results, like owning a car or a house, and in this research, adopting cryptocurrency. The logit regression model for this study can be seen below:

$$\ln(P_i/1-P_i) = \sum \beta_k X_i \dots \dots \dots (1)$$

Where:

- P_i = the probability that an event will occur
- 1-P_i = the probability that an event will not occur
- β_k = coefficients of the explanatory variables
- X_i = explanatory variables

The regression model of this study was estimated using the logit regression technique as specified below;

$$CCA = F(CSI, TCI, VSI) \dots \dots \dots (2)$$

Where:

- CCA = crypto currency adoption
- CSI = crypto currency Security Index
- TCI = Transaction cost Index
- VSI = Value Stability Index

Crypto Currency Adoption (CCA): This was evaluated using binary code. Owning crypto currencies is indicated by 1, while not owning any is indicated by 0.

Crypto Currency Security Index (CSI): This calculation involved dividing the rating given by respondents for crypto currency transaction security by the highest possible rating. Participants had to assess the security of cryptocurrency transactions on a scale from 0 to 4, with each rating having a weight of 0, 3, 6, 9, and 12.

Transaction Cost Index (TCI): This method involved dividing the weight of respondents' ratings of crypto currency transaction costs by the weight of the highest rating. Participants had to assess the expense of crypto currency transactions on a scale of 0 to 4, with each rating having a corresponding weight of 0, 3, 6, 9, and 12.

Value Stability Index (VSI): This method involves dividing the weight of how respondents rated the stability of cryptocurrency in terms of value by the weight of the highest rating. Participants had to assess the level of stability of cryptocurrencies on a scale from 0 to 4, with each rating assigned weights of 0, 3, 6, 9, and 12, respectively.

Spearman's Rank Correlation assesses how closely two variables are related in terms of their rankings. If rankings remain consistent, a high correlation coefficient will show a strong association. A substantial disparity in rankings will result in a low correlation coefficient, showing a weak connection. The correlation coefficient is expressed as

$$R = \frac{6\sum D^2 + (T^3 - T)/12}{N(N^2 - 1)} \dots \dots \dots (2)$$

Where:

- R = rank correlation coefficient
- D = difference in rankings
- T = number of ties rankings
- N = number of observations

In this study, the association between crypto currency transactions and the performance of ICT businesses is examined using the rank correlation between crypto currency acceptance index (CAI) and business performance index (BPI).

Crypto currency Acceptance Index (CAI): This is calculated by averaging the CSI, TCI, and VSI scores of each participant. We assume that respondents' ratings of cryptocurrencies in these areas provide insight into their level of acceptance of cryptocurrencies for online transactions.

Business Performance Index (BPI): BPI was created based on feedback from businesses regarding their profits, hiring, and new investments. Participants had to evaluate their company's success in these categories on a scale of 0 to 4. Zero

represents the minimum score and four is the maximum rating. Each rating is assigned a weight of 0, 3, 6, 9, or 12. Next, the total weight for each rating was divided by the total maximum weight.

$$BPI = \frac{\sum P_i}{\sum P_{max}} \dots \dots \dots (3)$$

Where:

P_i = the weight for each rating

P_{max} = the maximum weight for each rating

For example, if a respondent’s ratings are 3, 6 and 9. BPI will be 18/36 which is 0.5

Apriori Expectation: It is anticipated that the independent variables (CSI, TCI, VSI) will have a notable impact on the dependent variable (CCA) as they are likely to promote the adoption of cryptocurrencies and improve business outcomes due to secured transactions, reduced transaction costs, and stable cryptocurrency values. All variables were obtained from the feedback provided by the businesses that were contacted.

4. Findings

The data analysis techniques employed in this study were descriptive statistics, correlation analysis, and the pooled OLS regression technique. The results of the panel regression were used in testing each hypothesis of the study.

4.1. Descriptive statistics

In this section, the study examined the descriptive statistics for both the explanatory and dependent variables of interest. Each variable was examined based on the mean, standard deviation, maximum, and minimum.

Table 4.1: Summary of descriptive statistics of the determinants of crypto currency adoption among ICT businesses in Uyo

Variable	Obs	Mean	Std. Dev.	Min	Max
CCA	120	0.354	0.667	10.4	18.88
CSI	120	0.427	0.684	20.21	55.36
TCI	120	0.34	0.567	3.8	24.66
VSI	120	0.498	0.643	24	87.53

Author's Computation (2024)

Table 4.1 shows a summary of the descriptive statistics of the study. From table 4.1, it was observed that on average, crypto currency adoption (CCA) was 0.35 with a standard deviation of 0.667 and a minimum and maximum value of 10 and 18.88, respectively. This implies that on average, crypto currency adoption among ICT firms in Uyo was 35%. The crypto currency security index (CSI) on average was 0.43 with a standard deviation of 0.684 as well as a minimum and maximum value of 20.21 and 55.36, respectively. This implies that, on average, about 43% of crypto currency transactions are secured. The study also found that, on average, transaction cost index (TCI) was 0.34 with a standard deviation of 0.567. This implies that, on average, the transaction cost of crypto currency is about 34% relative to other platforms. The value stability index (VSI) on average was 0.498 with a standard deviation of 0.64. This implies that, on average, about 50% of crypto currency value is stable over time relative to other instruments of trading.

4.2. Correlation analysis

In this study, the Spearman rank correlation was employed since the data employed did not come from a normal distribution. The result obtained from the Spearman correlation is presented in Table 4.2.

Table 4.2: Correlation analysis of the relationship between crypto currency adoption and its determinants among ICT businesses in Uyo.

	CCA	CSI	TCI	VSI
CCA	1.000			
CSI	-0.3241	1.000		
TCI	0.1562	0.0234	1.000	
VSI	0.2312	0.2373	0.1253	1.000

Authors Computation (2024)

The correlation result above shows that TCI and VSI are positively correlated with the crypto currency adoption, though very weak. On the other hand, a negative and weak relationship exists between CSI and CCA. The correlation among the variables no doubt indicates the absence of multicollinearity.

4.3. Regression analysis

To examine the cause-effect relationships between the dependent variable and independent variables of the study, the study employed a regression technique. The study employed panel fixed and random effect regression analyses to ascertain the determinants of crypto currency adoption among ICT businesses in Uyo. The results of the pooled regression are presented and discussed below.

Table 4.3: Regression result of the effect of social capital disclosure on firms' value

	Pooled OLS	Fixed effect	Random effect
C	2.59 (0.0000)***	3.57 (0.0000)***	2.85 (0.000)***
CSI	0.42 (0.002)***	0.34 (0.006)***	-0.37 (0.002)***
TCI	-0.02 (0.000)***	-0.09 (0.439)	-0.22 (0.000)***
VSI	-0.03 (0.000)***	0.02 (0.546)	-0.12 (0.000)***
F- statistics/Wald statistics	21.17 (0.000)***	10.61 (0.000)***	61.02 (0.000)***
R ²	0.42	0.29	0.28
VIF	1.03		
Heteroscedasticity test	18.75 (0.000)		
Hausman test	1-33	(0.8567)	

N/B: brackets () are P-values

*** indicates significance at 0.01 and 0.05 level of significance

From table 4.3 above, the following inference can be drawn:

The R² of 0.42 indicates that 42% systematic variation in the dependent variable (CCA) is explained by the independent variables. This shows that crypto currency adoption can be influenced by other factors other than CSI, TCI, and VSI. The F-statistic of 21.17 with a p-value of 0.000 indicates the overall significance of the model and that the result can be used to make inferences and predictions. The VIF value of 1.03 is an indication of the absence of multicollinearity and that no variable in the model should be dropped. The heteroscedasticity value of 18.75 with the p-value of 0.000 indicates that the sampled firms in the study were different.

The random effect result presents the most favorable outcome than the fixed effect and was therefore adopted for analysis of the determinants of crypto currency adoption among ICT firms in Uyo. From the result, it can be noticed that there is a negative and significant relationship between CSI and CCA. The implication of this finding is that, if the degree of crypto currency security index falls, crypto currency adoption will likely fall. It can be deduced from this result that, if the security of investing in crypto currency is not guaranteed, this will send a negative signal to investors who will not want to risk their resources in an unsecured venture. Thus, crypto currency adoption may be impacted negatively.

The result also shows that there is a negative and significant effect of transaction cost index on crypto currency adoption. The implication of this finding is that, if the transaction cost of crypto currency in comparison to other transactions is reduced, the degree of crypto currency adoption will increase. This can be viewed from the perspective that, if the firms can assure investors of the reduced cost implications associated with crypto currency, the degree of crypto currency adoption will increase.

The result further shows that there is a negative and significant effect of the value stability index on crypto currency adoption. The implication of the finding is that, if the value of crypto currency is not stable relative to other currencies of trading, the degree of crypto currency adoption may likely reduce.

4.4. Test of hypotheses

The result of the random effect was used to test the hypotheses of this study.

Hypothesis one: Crypto currency security index has no significant relationship with crypto currency adoption.

From the random effect result, it can be seen that there is a significant negative relationship between CSI and CCA. In view of this result, the null hypothesis is rejected. This means that there is a significant relationship between crypto

currency security index and crypto currency adoption among ICT firms in Uyo.

Hypothesis two: There is no significant relationship between transaction cost index and crypto currency adoption among ICT firms in Uyo.

The result of the random effect shows that there is a negative and significant relationship between transaction cost index and crypto currency adoption among ICT firms in Uyo. On the grounds of this finding, the null hypothesis is rejected.

Hypothesis three: The value stability index does not significantly determine crypto currency adoption among ICT firms in Uyo. The result shows that there is a negative and significant relationship between VSI and CCA among ICT firms in Uyo. The null hypothesis is therefore rejected.

4.5. Discussion of findings

The focus of this study was to investigate the determinants of crypto currency adoption among ICT firms in Uyo. Determinants of crypto currency adoption were the crypto currency security index, transaction cost index, and value stability index. From the result of the finding, it was found that;

There is a negative and significant relationship between the cryptocurrency security index and crypto currency adoption among ICT businesses. The import of the result is that a 1% percent reduction in cryptocurrency security index will result in about 37% reduction in crypto currency adoption among ICT firms. Furthermore, the reduction in the crypto currency adoption may create a negative image for the firms, as investors may be led to believe that the venture is a risky venture. Such a negative impression may cause withdrawal of investments by firms, and this may in a way negatively affect the growth of the firms. The finding collaborates with the finding of [Anyfantaki, Arvanitis, and Topaloglou \(2018\)](#) that cryptocurrency transactions are secured for risk-averse investors.

Objective two of the study sought to determine the impact of the transaction cost index on crypto currency adoption among ICT businesses in Uyo. From the result, it is noted that there is a negative and significant relationship between transaction cost index and crypto currency adoption among ICT firms in Uyo. The result indicates that a 1% decrease in TCI will result in about a 22% systematic reduction in CCA. The implication of this result is that, if firms increase their transaction cost, there may be a reduction in the degree of adoption of cryptocurrency by ICT firms. This finding supports the work of [Acho \(2021\)](#) and [Gandolph et al \(2021\)](#) that many are attracted to cryptocurrency transactions in Nigeria because of the transaction speed and low transaction cost associated with its use, despite the risk and uncertainties associated with it.

Objective three sought to ascertain the impact of the Value Stability Index on cryptocurrency adoption among ICT businesses in Uyo. There is a negative and significant relationship between value stability index and crypto currency adoption among firms in Uyo. The implication of this finding is that a 1% reduction in the value of cryptocurrency with respect to other currencies will result in about a 22% systematic reduction in crypto currency adoption by ICT firms. This may result in losing investors' confidence in the firms. This finding further supports the work of [Anyfantaki, Arvanitis, and Topaloglou \(2018\)](#) that the daily average return of crypto currencies is higher than that of stocks and bonds due to their stability in value.

5. Conclusion

This study focused on the determinants of crypto currency adoption among ICT businesses in Uyo. The determinants of cryptocurrency adoption identified in the study were the cryptocurrency security index, transaction cost index, and value stability index. The three research objectives and three research hypotheses formulated and tested using pooled regression estimates showed that CSI, TCI, and VSI are significant determinants of crypto currency adoption among ICT businesses in Uyo. While it could be established based on the outcome of the coefficient of determination of the study that other factors other than the identified can influence the degree of cryptocurrency adoption by ICT firms, it should also be admitted that the identified three are significant judging from the fact that, being a digital business driven by technology, security must be guaranteed before people could consider venturing into such transactions as cryptocurrency. The reduced cost of transactions is a way of mitigating risks associated with loss of investments in the transactions. Thus, when the rate of loss is reduced as a result of reduced cost of investment, the degree of adoption of the business by businesses is bound to increase. Consequently, given the stability in value of crypto currency vis-à-vis other currencies, one would admit that it is not a coincidence that this factor can influence the degree of adoption of cryptocurrency by ICT businesses. In view of the findings of this study, it can be established that the determinants of crypto currency adoption by ICT businesses in Uyo are the degree of security associated with the transaction, the transaction cost of carrying out the transaction, and the stability in value of currency vis-à-vis other currencies of trading.

Going by the findings, this study recommends that:

As secure as cryptocurrency transactions may seem, there should be regulations on its operations by the government

through the monetary authority to ensure that the inventor of the platforms can be traced so as to enforce recovery in case of default. This approach will require collaboration among various monetary authorities across different climates.

The government of Nigeria, in collaboration with the inventor of cryptocurrency, should adopt a homegrown equivalent of cryptocurrency so that security of transactions can be ascertained within Nigerian state.

Investors in cryptocurrency should also be conscious of the fact that, no matter how stable a system may seem, stability of any system is usually short-lived due to some uncontrollable and systematic changes in macroeconomic environments. With this awareness, investors in cryptocurrency should weigh the risk and reduce the volume of their investments. At any rate, the investment should be taken on a short-term basis to avoid uncontrollable loss due to cyclical failure.

Contribution to knowledge

This study has been able to establish that the cryptocurrency security index, transaction cost index, and value stability index are significant determinants of cryptocurrency adoption among ICT businesses in Uyo.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare no conflicts of interest.

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