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Taxation of crypto currencies and other digital assets in Nigeria: Empirical evaluation of current and potential future implications

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Abstract
Objective: This study aims topo investigate the tax implications of cryptocurrency and other digital assets. It also aims to test the extent that tax evasion, digital technology, tax education and encryption of transaction could affect taxation of cryptocurrencies in Nigeria.
Methodology: A correlation survey research design was adopted for this study and the sample size of 300 was determined from a population of 1,200 using Taro Yamane formula.
Findings: There are significant positive relationships between digital technology as well as tax education on taxation of cryptocurrencies while there is a negative significant relationship between tax evasion on crypto currency taxation. Besides, encryption of digital transactions has a negative and insignificant effect on the taxation of digital assets like cryptocurrencies.
Research Limitations: The sample size is small and the number of studies is not enough for some variables. The study was also conducted in a developing country that has just ventured into the nascent space of digital assets taxation, and therefore the outcomes of the study should not be generalized but be interpreted with some elements of cautions.
Originality/value: This study contributes to cryptocurrencies taxation research by providing empirical evidences of the relationships that exist between tax evasion, digital technology, tax education and encryption of transaction and their effects on taxation of digital assets.

Keywords: Digital assets, cryptocurrency, tokens, bitcoins, non-fungible tokens (NFTs)

1. Introduction

We are in a digital age and it is normal for transactions in this digital age to be consummated using digital currency such as cryptocurrencies (cryptos) and other related digital assets as against the use of traditional fiat currency like the Nigerian naira, the United States dollars or the United Kingdom Pounds Sterling. Digitalization which brought with it digital assets has penetrated virtually every aspect of the global economy and it could be referred to as the new normal as it is steadily changing the global economic game and reshaping the future. Any economic activity that is enabled and driven by digital technologies like the blockchain and network interactions constitute the digital economy and it is quite dynamic, fast and data driven. Digital technology is gaining pace and its impact is fast spreading to the whole economic spectrum and it is becoming more and more integrated into our daily lives as well as our economic system. The global financial system is absolutely embracing the current evolution from physical currency to almost digital currencies through the medium of blockchain technology (Bartoletti, *et al*; 2017) [2]. However, there have been apprehension and doubts by government and the public as to the effect this new innovation would have on the people and on the economic landscape.

Cryptocurrencies are mainly designed to function without independent regulation and are safeguarded from being exposed to government agencies for control (Gilbert & Loi, 2018) [3]. This has made most government and financial institutions to be apprehensive about its adoption. This fear made the Central Bank of Nigeria to issue on February 2021 a directive prohibiting banks and other financial institutions from offering services to cryptocurrency traders and directed them to freeze the accounts of persons or entities involved in cryptocurrency transactions using their payment system.

Upon recognition of growing adoption and economic importance of digital assets and in order to harness their potentials for revenue buoyancy, the Nigerian government surprisingly announced its decision to tax digital assets by introducing it into the recently approved Finance Act 2023 with effective date of 1 May 2023. According to a report, in 2022, about $109.04 million was received and $141.12 million sent in crypto from Nigeria (Best Crypto Exchange Nigeria, 2022). With no regulations on taxation of cryptocurrencies, these trades most likely went unreported to the revenue officials and consequently subject to tax. With a tax to GDP ratio of about 8 percent (Osinbanjo, 2022), Nigeria losses opportunities to improve tax collection and encourages her citizens to develop an apathy to self-assessing themselves on profits from crypto dealings.

Nigerian government policy reversal to subject digital assets such as cryptocurrency to tax is a right step towards recognizing cryptos as legitimate assets and integrating them into the existing financial and regulatory framework. When Nigerian gets around to tax crypto in practical terms, there would be benefits in terms of increase in revenue yields to finance the annual budget. And of course there would be initial resistance, high incidences on non-compliance and other challenges. Hence the objective of this paper is to evaluate the current and potential future implications of subjecting digital assets such as cryptocurrencies to tax in Nigeria. Specific objectives shall include:

1. To investigate the extent to which tax evasion could affect cryptocurrency taxation.
2. To investigate the extent to which digital technology could affect cryptocurrency taxation.
3. To investigate the extent to which tax education could affect cryptocurrency taxation.
4. To investigate the extent to which encryption of transaction could affect cryptocurrency taxation.

The above specific objectives have led to the following formulated hypotheses to be tested stated in the null form:

Ho1: Tax evasion does not have negative and significant effect on cryptocurrency taxation.

Ho2: Digital Technology does not have positive and significant effect on cryptocurrency taxation.

Ho3: Tax education does not have positive and significant effect on cryptocurrency taxation.

Ho4: Encryption of digital transactions does not have negative and significant effect on crypto currency taxation.

2. Conceptualizing Digital Assets

2.1. Digital Assets

"Assets are resources controlled by an entity as a result of past events from which future economic benefits are expected to flow to the entity" (IASB Framework - IAS 1). This implies that a digital asset is any digital resource controlled by a person (real and artificial person) from which economic benefits can be realized and the value can be determined. It could be anything that is created and stored using digital or block chain technology and that has or could provide value. Digital assets may include cryptocurrencies, non-fungible tokens (NFTs), data and written contents, images, videos, etc. Such assets have valid ownership rights and value creation potentials. To be effectively considered and classified as a digital asset, an asset must have value creation potential for the owner and the potential to transfer ownership through acquisition, gifting/bequeathals or other means of transfer.

2.1.1. Cryptocurrencies

Cryptocurrency is an alternative to government issued fiat currencies such as the naira, dollars, pounds, yen, etc. It is a digital, cybernetic or virtual currency that is created and developed using blockchain technology and recorded as well on a blockchain. Crypto currency is classified as a digital asset as it has value addition potentials to the owners through the concept of tokenization on a blockchain. Cryptocurrencies like bitcoins and ethereum are important in a digital economy because of their global use, security and cost effectiveness. They are generally seen as the future of money. Cryptocurrency is somewhat difficult to regulate by government authorities because of their nature of decentralization, high volatility, blockchain and cryptographically connected among other factors. Bitcoin is the first and most popular cryptocurrency introduced in 2009 by a pseudonym, Satoshi Nikamoto. All other cryptocurrencies such as Ethereum, Polygon, Cardano, XRP, Solana, USDT, Bitcoin cash, Litecoin, BNB,Doge, Shiba Inu, etc are referred to as alternative to bitcoin – altcoins.

2.1.2. Taxation of Digital Assets in Nigeria

The Nigerian Finance Act 2023 which gained the Presidential assent on 28 May 2023 has incorporated into section 3(a) of the Capital Gains Tax (CGT) Act and provides that: "forms of property shall be assets for the purposes of this Act, whether situated in Nigeria or not, including options, debts, digital assets and incorporeal property generally." This implies that digital assets which include cryptocurrencies and non-fungible tokens (NFTs) are to be considered and treated as chargeable assets liable to tax under the provisions of the Capital Gains Tax Act. This means that individuals or entities registered in Nigeria or non-resident entities that make any gains on disposal of digital assets including cryptocurrencies and NFTs will be charged to capital gains tax in Nigeria at a flat rate of 10 percent. The 10 percent rate is applicable to a capital gain which is arrived at by deducting or adjusting for all allowable expenses incurred in disposing of the asset from the sales proceeds. The trading partners (the buyers and sellers) of cryptocurrencies are obligated to report every cryptocurrency transaction and disposal made by them in the particular tax year.

2.1.3. Challenges of taxing Crypto in Nigeria

Due to the nature of digital assets such as valuation, tracking transactions and international complexities, taxing crypto could be challenging. There is need for government to establish clear guidelines and provide adequate tax education and support to taxpayers so as to understand its workings. According to Yerell and Orkunoglu-Sahin (2018) [18], "tax laws will have difficulty in catching up the technological development in crypto-currencies as there is no inter-country or even inter-state cohesion and application". Taxing crypto

currency would be more complex as cryptos are defined differently in different tax jurisdiction as a financial instruments, commodities, properties, foreign currencies, payment system, security, etc. Besides, the methods of taxation are different and complex as it is pretty difficult to track digital assets for taxation. Moreso, the Nigerian tax authorities will grapple not only with the required technical expertise to tax digital assets but also with the issue of tax evasion on the part of the taxpaying public as regards cryptocurrency exchange.

As most of the crypto-currencies wallet owners use them as investment accounts, the gains in such holding and encrypted wallets may be difficult to access by tax authorities unless they are expressly granted or when such cryptos are openly traded in exchanges where they could be tracked for tax purposes. This go to show that taxation of encrypted and digital assets running in a distributable ledger - the blockchain - with addresses, aliases and pseudonyms with no real names at times might be difficult to access and track for tax purposes by revenue authorities.

2.2 Theoretical Review

2.2.1 Mises Monetary Theory

Mises' monetary theory gives attention to the historical development, nature and value of money and its influence in the determination of a monetary policy of a State or Nation. Ludwig Von Mises uses regression theorem to lucidly explain the reason money is demanded hence the theory is also referred to as Mises Regression Theorem. The theory is based on the assumption that all money must ultimately derive their purchasing power from a historical tie to a commodity that was valued in a state of barter. The theory identifies that people expect future purchasing power based upon current and previously observed purchasing powers. He emphatically asserts that the forms of money have nothing to do with the physical properties of the goods or commodities that are used as money. And this is where cryptocurrency comes in. According to Jeffrey (2014), the theory of the value of money is able to trace the objective exchange value of money only to that point where it is no longer the value of money but just the value of a commodity. This presupposes that the value of money is nothing other than the value of an object that is useful in some other way than as money. For the theorem to work, he explained that a medium of exchange must already have the qualities necessary for a medium of exchange, having a price and be accepted on the market.

2.3. Empirical Review

Studies on digital assets across the globe have divergent perspectives. Cost-effectiveness in the transfer of money, the acceleration of transactions and international payments have been identified by Lee *et al;* (2018) [7] as some of the positive perspectives about digital assets. However, cryptocurrencies have been criticized on the ground of the uncertainty and difficulties of it being effectively taxed. Its high volatility and exposure to activities of hackers have also been expressed. The cumbersomeness and complexity of digital assets, using cryptocurrencies as a storage medium having many risks, large mining, etc have also been identified by Spenkelink, (2014) [16] as some of the negative vibes about cryptocurrencies.

Yerell and Orkunoglu-Sahin (2018) [18] explored the concept of cryptocurrencies and taxation. They found that cryptocurrency is an alternative currency option and the development of crypto coin and block chain encryption technology will enable many new technologies to be achieved in the future but assert that it is not recommended to widely use it due to the unknown risks and uncertainty of the gains and losses of the asset. They also identified that tax laws will have difficulties in catching up with the technological development in crypto-currencies. In the taxation of cryptos, there is no inter-country or even inter-state cohesion and application as cryptos are defined differently in different tax jurisdiction as a financial instruments, commodities, properties, foreign currencies, payment system, security and the methods of taxation is different and complex as it is pretty difficult to track digital assets for taxation.

Ahannaya, *et al*; (2021) [1] investigated the effect of cryptocurrencies on the Nigerian economy. Their findings show that blockchain technology has its fair share of benefits as it could be used to assemble and protect essential data and information such as health records, vote records, etc. and cryptocurrencies such as bitcoins and ethereum could be used to perform online transactions. The study concludes that a significant number of people are now fully persuaded that the digital currency is genuine and has value. Though, digital currencies may be attractive to cybercriminals and present a host of new challenges to law enforcement in Nigeria, they posited that their approval as a national development tool in the digital age should be generally encouraged.

Korneeva, *et al;* (2019) [6] investigated the leading problems and prospects in the regulation of the digital economy. The paper focused on the regulatory environment in the digital economy and discusses some of the important issues such as the taxation of cryptocurrencies. Their results show that digital economy requires special measures of regulations due to its specific attributes and nature. They submitted that crypto currencies might speed up the process of money transfers and international payments; however they pose numerous threats related to the anonymity of such transactions. They also highlighted the issues of cybercrimes and hacker attacks.

Some evidences on the taxation of crypto-currencies show that crypto-currencies are used for tax evasion purposes. As most of the crypto-currencies wallet owners use them as investment accounts. The gains in such holding wallets are not accessible to the tax authorities unless they are expressly granted or when such crypto is openly traded in exchanges where they could be tracked for tax purposes. Tax evaders and money lauders often transfer bitcoins to multiple wallets to hide funding sources and the destination (Menlendez, 2013). As a result, the legal regulation on digital assets such as cryptocurrencies is not uniform as it changes across jurisdiction. In some tax jurisdiction, the use and trading of cryptocurrencies is prohibited and in other jurisdiction, it is legal. Legal regulations on cryptocurrencies are taxed or exempted from taxation depending on whether or not the cryptocurrency being assessed is seen as capital gains, property, currency, security or a commodity.

3. Methodology

A correlation survey research design was adopted for this study and the population consisted of tax authorities –The Federal Inland Revenue Service and the State Internal Revenue Service - and financial institutions operating in the Niger Delta region of Nigeria, as well as tax payers and practitioners selected purposively using convenience

sampling technique from an estimated population of 1,200. A sample size of 300 was determined from the population using Yamane formula (Yamane, 1967) where:
n = the sample size; N = the population size; and E = the error term (0.05)
$n = N/ (1 + N (e)^2$
$n = 1,200/ (1 + 1,200 (0.05)^2$
n = 300.

This implies that respondents were chosen for the study on the basis of the predefined criteria. A closed-ended questionnaire was used as data collection instrument and prepared to collect the primary data to meet the purpose of this study. Each statement was drawn using liker type questionnaire and ordinary least square method was used to analyze and test the formulated hypotheses.

3.1 Model Specification
The following least square model was developed to guide the evaluation of the variables' impacts and their associations.

$TCCr = \beta o + \beta 1\ TEV + \beta 2\ DTech + \beta 3\ TEdu + \beta 4 ETra$

Where: TCCr = tax collection from cryptocurrency, (the dependent variable); TEV = tax evasion; Dtech = digital technology; Tedu = tax education; Etra = encryption of transaction (independent variables).

4. Results

Table 1: Correlation matrix results

	TCCr	TEV	Dtech	Tedu	Etra
TCCr	1				
TEV	0.648**	1			
Dtech	0.704**	0.588**	1		
Tedu	0.787**	0.598**	0.581**	1	
Etra	0.614**	0.570**	0.678**	0.522**	1

** means that all outcomes have a significant correlation with tax collection of crypto currency at 5 percent significant level

Table 2: Regression weights for the level of significant and critical ratio

Latent variable	Path	Measurement variables	Standard estimate (β)	S.E.	C.R.	Sig.
TCCr	↔	ax evasion	0.812	0.087	8.41	0.000***
TCCr	↔	Digital technology	0.913	0.199	10.2	0.000***
TCCr	↔	Tax education	0.588	0.088	4.77	0.000***
TCCr	↔	Encryption of transaction	0.623	0.114	9.83	0.000***

*** means the outcomes are significant at 1 percent level of significance

Tax evasion (TEV) was ascertained to have a value of 0.812, digital technology (DTech) of 0.913, tax education (TEdu) of 0.588 and ecryption of transaction (Etra) of 0.623.

Table 3: Results of Hypothesis Tested and Decisions

Hypothesis	Predicted hypothesis	Direction and structural path	Factor loading (β)	p-value	Decision
Hypothesis 1	H1 (-) TCCr	TEV →	0.812	0.000	Rejected
Hypothesis 2	H1 (+) TCCR	Dtech →	0.913	0.000	Rejected
Hypothesis 3	H3 (+) TCCR	Tedu →	0.588	0.000	Rejected
Hypothesis 4	H4 (-) TCCR	Etra →	0.623	0.007	Accepted

4.1. Test of hypothesis and decisions
The formulated null hypothesis is rejected when the p-value (significance level determined) is less than or equal to the significance level (the set cut off value of 0.05 or 0.01). Based on Table 3 outcomes, tax evasion ($\beta = 0.812$, $p < 0.05$), digital technology ($\beta = 0.913$, $p < 0.05$), tax education ($\beta = 0.588$, $p < 0.05$), encryption of transaction ($\beta = 0.623$, $p > 0.07$). This led to the rejection of the entire null hypotheses except encryption of transaction. Rejection of the null hypothesis implies that there is no sufficient statistical evidence to conclude that the null hypothesis is true.

5. Summary of findings and conclusion
Hypothesis 1 (Ho_1): Tax evasion does not have a negative and significant effect on crypto currency taxation. This hypothesis was not supported in our findings. We therefore conclude that there is a negative and significant relationship between tax evasion and taxation of cryptocurrencies. This outcomes supports previous studies which concluded that tax evasion is negatively associated with tax revenue performance (Kemme *et al*; 2020; Mu *et al*;; Ndubula; Matiku, 2021 & Mu *et al;* 2023) [5, 11].
Hypothesis 2 (Ho_2): Digital Technology does not have a positive and significant effect on cryptocurrency taxation. There is no statistical evidence to this in our finding. We therefore conclude that there is a positive and significant relationship between digital technology and taxation of cryptocurrencies. This corroborates previous studies that found that technology has a vital role and positive impact on tax collection performance (Otatunji & Ayodele, 2017; Okunogbe and Pouliquen, 2018; Hamza *et al*; 2021) [13, 12, 4].
Hypothesis 3 (Ho_3): Tax education does not have a positive

and significant effect on cryptocurrency taxation. This assertion was not supported by our findings. We therefore conclude that tax education positively and significantly influence taxation of cryptocurrencies. This to a large extent agrees with the findings of Onuoha *et al*; (2019) [14]; Ndubula and Matiku, (2021) [11] who posits that tax education could enhance tax revenue collection performance. This suggests that tax education is machinery that could be used by tax authorities to improve tax payment compliance.

Hypothesis 4 (H_{O4}): Encryption of digital transactions does not have negative and significant effect on crypto currency taxation. Yes if has a negative effect but it is not significant as p-value of 0.07 > 0.05 (significant level).We can therefore conclude that the test is statistically insignificant at 0.05 level of significance. This means that though the encryption of digital transaction has a negative correlation with the taxation of crypto assets, however the relationship is insignificant.

5.1 Recommendations

In the taxation of crypto assets and other digital assets, digital technology could improve tax collection performance as well as reduce incidences of tax evasion. Therefore it is recommended that the Nigerian government through the relevant tax authorities should deploy the use of the latest artificial intelligence, machine learning technology and other related technologies to track, facilitate and assess to tax crypto assets. They should also explore the effective use of these technologies in reducing the frequent reported cases of tax evasion as well as to improve service delivery. Tax awareness should be created in the populace right from the early stage even while still in basic school. Still on tax education, the taxpayers should be supplied with sufficient information about tax matters as tax education campaign could reduce errors by empowering taxpayers with tax knowledge to do what is right.

Conflict of Interest

The authors, Osirim, M and Abolo, A.P. who are doctorate degree holders and chartered accountants in the field of accountancy hereby declare that there is no conflict of interest in this manuscript.

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