



An Overview Exposure of Governments Utilizing of Crypto-currency for Public Financing

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Abstract

The emergence of crypto-currency as a means of digital payments using blockchain technology is creating a paradigm shift on individuals and public sector financing. Therefore, this study examines the exposure of various governments on revenue opportunities from crypto-currency. Through a qualitative literature survey of some countries in Europe, America, Asia, Middle-east, and Africa, the study shows a higher level of exposure by the European countries and America, followed by Asia, and Africa. The study also revealed a general high level of patronage in crypto assets in most countries except in countries where it is banned. In European countries, instead of banning its use, they warned and caution their citizens while observing its operations and mechanics. Other findings include its considerations as an asset for the purpose of taxation and revenue generation in countries with effective regulatory practices. While, on the other hand, where it is not regulated it affects the monetary policies of such countries via speculative investments and pressure of foreign currency demands especially in countries with extractive economic system. The study therefore concludes by suggesting that policy makers of different countries should take advantage of not just the crypto-currency but blockchain technology imbedded in crypto-currency to expand the scope of their public finance, facilitate cross border transactions, improve financial accountability and citizens financial inclusions.

Keywords: Crypto-currency, Exposure, Government, overview Public Financing.

Introduction

The importance of finance in the existence and survivals of individual human beings, and governments alike cannot be over-emphasized. Past and presents governments were not just supported by finance but the type of governments in

operation were determined by its financial liquidity. Through public financing, government were able to provide essential service for the continued existence of various civilizations. The overall state activities in terms of provision of goods and services are centered around the issues

of public finance. Accordingly, Public financing varies from country-to-country base on their differences in state ideology. In terms of mobilization of funds, Capitalist states rely heavily on the private sector, while Socialist rely heavily on the public sector. Although, other economic circumstances and austerity conditions like Covid-19, war, natural disasters, economic meltdowns etc. makes governments irrespective of their state ideology to adopt a combinations of hybrid public financing approach in their daily provisions of goods and services. Despite differences in state ideologies the overall objective of public finance as opined by Bhatia, L (2006) is focused on allocation of state resources, adjustment in the distributions of income and wealth, stabilization of prices and employments.

A review of the common means of public financing in most part of the world are revenue generated via taxes from individuals, companies, interest from loans, fines, investments in real estates, direct foreign investments etc. . More importantly, changes in the history of transformation of money from Cowries, Metals , Silver, Gold, to Paper money accompanied with the emergence of institutions of money at local and international arena is all about addressing the issue of convertibility, and convenience. These changes informed the dramatic shift in exploring other means of public financing by many governments from pre-industrial, industrial, postindustrial and now to neo-postindustrial (Artificial intelligence) era or more precisely stage 5.0.

The inevitability of changes has now brought in the use of block chain technologies in facilitating financial exchange and investments. Cousera (2023) noted that , the dramatic future of this stage is that, digital skills have changed more significantly than the fastest-growing human skill. Which means that technology has penetrated all human endeavors. According to Temitope (2023) businesses in Nigeria are keenly tapping into the potential of cutting-edge technologies to drive their growth strategies. In the same vain “ Equinix’s” 2023 Global Tech Trends Survey, shows that forty seven (47%) of Nigerian businesses are actively embracing interconnection through technology. While recent investments activities in Africa remains significantly skewed towards Fintech’s which account for over ninety percent (90%) of total M&A volumes in Africa (Daria 2020).

The open move towards technology made it easy for states, counties, and other public finance users to accept the use of cryptocurrencies not just as an investment, but also for payments (US public Finance) (Georfery, et al 2023). Similarly, United Arab Emirate (UAE) as one of the leading innovators is expected to witness and exponential rise in crypto through Google-Coinbase type partnerships especially in the p2p segment between web3 and web2 giants crypto (James M. 2023).

The consequential impact of this paradigm shift is making big companies, and individuals working together in large pools to compete for the right to add crypto

currency transactions to their investment portfolio because World Bank Group report of 2018 shows rise in revenue of about Twenty Million Dollars (\$20) a day . The Central Bank of Nigeria (CBN) research department similarly acknowledges that applying similar technology will increase Nigeria's GDP by Twenty Nine Billion Dollars (US\$29.00) billion over the next 10 years.

However, the decentralized nature of crypto -currency is posing a threat to government control and regulations. Many countries are skeptical in considering it as an option of investments let alone adopting it as a legal tender.

Therefore, the aim of this study is to review the exposure of different countries on the acceptability of crypto-currency as a means of generating revenue by different governments. More specifically, looking at it from the point of view of public financing in government.

The study is divided in to five sections. Introduction, literature reviews and theoretical framework, methodology, analysis and recommendations.

Conceptual Review

The concept of cryptocurrency has been used and defined interchangeable with concepts of digital currency since both are electronic. Considerable scholarly definition of the concept of crypto-currency revolves around the digitality been electronic. For instance scholars like David . (2020)

observed that cryptocurrencies are digital money in electronic payment systems that generally do not require government backing or the involvement of an intermediary, such as a banks. Instead, users of the system validate payments using certain protocols. Williams (2022) defines cryptocurrency as digital money in an electronic payment system where payments are ascertained by a decentralized network of system users and cryptographic protocols independent of states apex banks. Similarly, financial research institutions such as Investipedia (2024) defines it as a digital or virtual currency secured by cryptography, which makes it nearly impossible to counterfeit or double spend. Most cryptocurrencies exist on decentralized networks using blockchain technology on a distributed ledger enforced by a distinct network of computers. Trend Micro (2022) sees it as an encrypted data string that denotes a unit of currency. It is monitored and organized by a peer-to-peer network called a blockchain, which also serves as a secure ledger of transactions, e.g., buying, selling, and transferring. Unlike physical money, cryptocurrencies are decentralized, which means they are not issued by governments or other financial institutions. According to Roselyne w (2023) Cryptocurrency is decentralized digital money that's based on blockchain technology.

In a similar fashion, Wikipedia (2022) sees crypto-currency, or crypto as a digital currency designed to work as a medium of exchange through a computer network that is not reliant on any central authority, such as a government or bank, to uphold or

maintain it. As a new form of money cryptocurrency acts as money in an electronic payment system in which a network of computers, rather than a single third-party intermediary, validates transactions (US Congressional Research Service 2020)

Base on the definitions, crypto currency is can be seen to mean an electronic and encrypted money used in facilitating exchange amongst and between different individuals, and corporate bodies. Base on its global acceptability and appeal to generation 'Y' (Millennials) and 'Z' (Gen Zs) as a means of exchange it can be referred as the inevitable future currency . Accordingly, it is unique with features such as being electronic, use of blockchain technology, transparent, third party elimination, transits boundary huddles, financial inclusion, blocking financial leakages, etc.

Apart from the advantages of flexibility in transactional speed, security transparency and high rate of returns, Luchkin (2020) observed that the main threat to financial security from virtual money is the absence of a mechanism and the possibility of freezing funds from the outside, the absolute irreversibility of transactions and the impersonality of the parties in settlements. Other fears include its pseudonymous and decentralized nature that could facilitate money laundering and other crimes, raising the issue of whether existing regulations appropriately guard against this possibility (Congressional Research Service <https://crsreports.congress.gov R45427>)

Thus, crypto currencies can be classified into two. Stable and non-stable coins based on its usability and investments. A non-stable cryptocurrency is volatile and fluctuates significantly base on market forces(Alison 2024). While stablecoins, are pegged to a stable asset like the US dollar or gold as such more secured (Lennart, 2023). Just like the operations of the capital markets, non-stable coins are affected by factors such as speculation, market sentiment, regulatory changes, supply and demand.

Types of Investments in Crypto-currencies

Proshare report of 2023 indicates that cryptocurrency is increasingly becoming a feature in the portfolio of many investors, particularly those of Millennials resulting to a global increase from a 2.5 index score to a 24-index score in 2021. Which shows that the total global adoption has grown by over 2300% since 2019 and over 881% in 2022.

Investments in crypto-currency can be done by both individuals, corporate bodies and governments. Individual common investments in cryptocurrency are in the form of Buying & holding, Trading, Mining, Staking, Initial offering, and Decentralised Financing (Defi). While a more advanced individual investments are in the form of :

1. **Yield Farming:** Yield farming involves providing liquidity to decentralized exchanges or lending platforms in exchange for rewards, such as interest or additional tokens. This allows investors to earn passive

income by staking their cryptocurrency assets. This can be better understood as fixed deposit in traditional conventional banking system.

2. **Liquidity Provision:** Investors can provide liquidity to decentralized exchanges (DEXs) by depositing pairs of tokens into liquidity pools. In return, they earn trading fees and rewards based on the amount of liquidity provided. This is a kind of “mudaraba” investments in Islamic finance otherwise known as sleeping partnership in conventional financial dealings (siddiqi 2010)
3. **Lending and Borrowing:** DeFi platforms allow users to lend their cryptocurrency assets to earn interest or borrow assets by collateralizing their holdings. This enables investors to earn passive income from their idle assets or access liquidity without traditional credit checks.
4. **Decentralized Exchanges:** Investors can trade cryptocurrencies and tokens on decentralized exchanges, which operate without a central authority. This allows for peer-to-peer trading and provides access to a wide range of digital assets.
5. **Synthetic Assets:** DeFi platforms offer synthetic assets that replicate the value of real-world assets, such as stocks, commodities, or fiat currencies. Investors can gain exposure to traditional financial markets through these synthetic assets.

6. **Governance Tokens:** Some DeFi platforms issue governance tokens that allow holders to participate in the decision-making process for platform upgrades and changes. These tokens may also entitle holders to rewards or voting rights.

While government's opportunities lie more in blockchain projects through subsidies, grants, and other investment programs targeted at fostering innovation and economic development. The potential government funding opportunities for decentralized investments includes:

1. **Research and Development Grants:** Governments may offer grants to support research and development activities in the blockchain and DeFi space. These grants can be used to fund innovative projects, technology development, and academic research related to decentralized finance.
2. **Innovation Funds:** Some governments have established innovation funds or venture capital programs to invest in emerging technologies, including blockchain and decentralized finance. These funds may provide financial support to startups, entrepreneurs, and technology companies working on DeFi projects.
3. **Public-Private Partnerships:** Governments may collaborate with private sector entities to establish investment funds or incubator programs focused on blockchain and DeFi innovation. These partnerships

can provide funding, mentorship, and resources to support decentralized investment initiatives.

4. **Regulatory Sandboxes:** Regulatory sandboxes are programs that allow startups and fintech companies to test innovative financial products and services in a controlled environment. Participating in a regulatory sandbox can provide access to government support, regulatory guidance, and potential funding opportunities.
5. **Tax Credits and Incentives:** Some governments offer tax credits, incentives, or subsidies to businesses and investors involved in blockchain and DeFi projects. These incentives can help reduce the cost of investment and encourage innovation in the decentralized finance sector.

Empirical Studies

A study by Investopedia (2024) of 'Where crypto-currencies are Legal and illegal' shows countries of USA, Canada, and many European countries legalize the use of bitcoins while countries of China, Qatar and Saudi Arabia considers it use as illegal. However European Union (EU) cautions its members on the need regulations considering its decentralized nature. Thus the study concluded that global legislative landscape will likely continue to change as crypto matures to asset, legal tender, currency, and payment method. In the same vein, Tatiyan M, (2022), Question whether the adoption of bitcoins in El Salvado provided a solution to its public

financial crisis. The study thus, examined issues of structural problems of El Salvador's public finance, the structure and approval of Bitcoin Law, Bitcoin law as an economic policy, and public projects tied to bitcoins. The findings were that, the Bitcoin Law in El Salvador has not met the objective of being a catalyst for financial inclusion for the population. On the contrary, it has deepened structural fiscal problems by creating a further weakening of the State's financial capacity to respond to the needs of the most economically and socially vulnerable population.

Despite the seniority of these findings the use of crypto-currency is becoming an inevitable phenomenon especially in countries with poor economic stands because of its hedging opportunities and advantages. Therefore, Banwo & Ighodalo (2023) examined the tax implication of digital asset in a study of taxation of digital assets in Nigeria and what taxpayers and businesses should expect? Their study focused on capital gain tax (CGT) of ten percent (10%) of the Finance Act 2023 which was signed into law on May 28, 2023 but with effect from September 1, 2023. At the same time, the study noted that CBN contradicted the policy by prohibiting all financial institutions to participate in crypto-currency dealings. However, the study anticipated practical challenges that will be encountered by taxpayers and the concerned tax authorities responsible for the administration of CGT on digital assets and the difficulty associated with fair market valuation for tax purpose. Thus the study concludes, that users of crypto-currency

are advised to consult their tax lawyers for professional and regulatory support regarding the possible tax consequences of their digital asset transactions. The findings in a study of the Implications of transactions in crypto-currencies on monetary policies in Nigeria by Ezema, Igwe, & Yunana, (2023) revealed that Bitcoin transactions influences real exchange rate swings in Nigeria, and other price level. Which depicts serious implications for monetary policy and financial system stability. Thus the study suggest that the governments pays a serious attention on its use and also supports CBN actions banning transactions in Bitcoin and other forms of cryptocurrencies for licensed banks and financial institutions in Nigeria. Similarly while Examining the Relationship between Bitcoin and Stock returns in Nigeria by Yakubu, J.& Samuel (2023).

Through a correlation analysis the study results shows the presence of a positive relationship between Bitcoin and stock returns. Although the correlation was weak, which suggest that the continued rise in the adoption and use of crypto-currency in the future will create a strong effect. Thus the study noted fears of negative implications on the control of monetary policies in Nigeria. The study therefore recommends close monitoring of the adoption of crypto assets by the monetary authority in view of the risks they pose to financial system stability. In a closely related endeavour, Akintola(2022) investigated the relationship between cryptocurrencies and fixed income market in Nigeria, through a simple correlation analysis of the volume of

trades in Bitcoin as compared to fixed income markets. The results from the correlation analysis show the existence of a negative relationship between the 30-year bond bid-to-cover ratio and the volume of trades in bitcoin in Nigeria. Their study, therefore, recommends that the CBN and the Debt Management Office (DMO) articulate and implement policies that are geared towards deepening the fixed income market with a view to attracting investment away from cryptocurrencies to dampen volatility in the economy.

This empirical review of literatures shows the inevitability and the growing demand in the use of crypto assets. The deepening of crypto investments by individuals is strong despite fears and attempts by various government to stop it.

Theoretical Framework

The study is anchored on Network society theory. Manuel Castells founded the theory of Network Society (1996, 1997, 1998), his idea about technological change is seen as the main catalyst responsible for the myriad of processes referred to as globalization. Castells' approach and notion about technology in his view represents the new 'age of information'. He argued that the processes of information technology and new economy resulted in the rise of the Network society. The noted that information technology (IT), entails the use of computers and the Internet, representing a new technological paradigm while the new economy entails an informational, knowledge-based organized production and

global interactions. Castells' assumption of a global economy is an economy with capacity to work as a unit in independently on a planetary scale involving global financial markets, globalization of trade, spread of international production networks, and above all a selective globalization of science and technology.

Castells considered Networked enterprise as the key institution of the new economy which Castells considered as the focal point of a more general form of social organization, of the network society. This involves a new organizational logic based on the network structure in interaction with the new technological paradigm. The network form of social organization manifest itself in forms in cultural and institutional contexts breaking down the old rigid vertical structures creating horizontal and flexible structures. Castells goes on to argue that the image of giant transnational corporations (TNCs) as centralized structures driving the global economy is old and should be replaced by the emergence of internationally networked enterprises as the key players of global economy. Castells sees a close linkage between culture and productive forces in this informational mode of development due to the centrality of the symbolic order, of sign production, and of consumption to IT.

Indeed the assumptions of Castells theory fits the concepts of crypto-currency and blockchain technology . the use of information technology has transmitted the idea of crypto-currency all over the world

breaking down the barriers of Apex or Central banks through peer to peer transactions. Here, the enterprise involved in the activities of crypto-currency are seen as the "networked enterprises" uses blockchain technology in facilitating seamless global transactions across boundaries. This phenomenal boom of crypto-currency is collapsing not just state boundaries but the economic strength of TCN. In the same vain, creating a new global culture embraced mostly by Generation 'Y' and Generations 'Z'. its consequential impact can be seen in the creation of online employments, online markets, the use of Artificial Intelligence (AI) in work places, the use of drones as military weapons etc.

Methodology

The study adopted a content analysis of literatures derived from different part of the world concerned to the use of crypto-currencies in measures of taxation. Thematic arrangements of related contents were analyzed and presented based on its contributions to the knowledge of public finance as it relates to fiscal policies.

Thus, the population and samples of the study is derived purposely looking at the fact that no country is immune from its use except where it is banned. Based on this, the study focused on countries where digital assets transactions are regularized and controlled for the purpose of generating revenue through tax. Below is the tax policies of different countries on crypto-currencies.

S/N	Countries	Tax Policies	Source
1	Austria	27.5 %	Alexey N (2023)
2	Belarus	20%	Alexey N (2023)
3	Britain	10%	Alexey N (2023)
4	Bulgaria	10%	Alexey N (2023)
5	Croatia	10% (no tax on exchange or storage for more than 2 years)	Alexey N (2023)
6	Cyprus		Alexey N (2023)
7	Czech Republic	15-23%	Alexey N (2023)
8	Denmark	37.1 % on income of € 74,300 and +15 % if this amount is exceeded	Alexey N (2023)
9	Estonia	20%	Alexey N (2023)
10	Finland	30% on income up to 30,000 € and 34% more if this amount is higher	Alexey N (2023)
11	France	0 % for income up to 305 €, after that 30 %	Alexey N (2023)
12	Germany	25 % + 5,5 % solidarity surcharge	Alexey N (2023)
13	Italy	0 % if the income is less than 2,000 €, and 26 % if it is more than 2,000 €	Alexey N (2023)
14	Latvia	20%	Alexey N (2023)
15	Lithuania	15% if income is up to €202,188, 20% if above.	Alexey N (2023)
16	Luxembourg	8 % if income is less than €11,265, up to 42 % for profits over €200,004	Alexey N (2023)
17	Netherlands	0-35% declared as savings, paid 31 % of the savings and investment base	Alexey N (2023)
18	Poland	19%	Alexey N (2023)
19	Portugal	28 %, but only if the assets have been held for less than a year	Alexey N (2023)
20	Romania	10% if the total income is less than €121	Alexey N (2023)
21	Spain	19-23%	Alexey N (2023)
22	Sweden	0 %, 10 % or 20 %, depending on tax category	Alexey N (2023)

ASIAN COUNTRIES

24	Countries	Tax policies	Alexey N (2023)
25	India	30%	Alexey N (2023)
26	Indonesia	0.1 % -0.2%	Alexey N (2023)
27	Hong kong	15%	Alexey N (2023)
28	Japan	15-55%	Alexey N (2023)
29	China	Banned	Alexey N (2023)
30	Singapore	Not taxed	Alexey N (2023)

31	Malta	Not taxed	Alexey N (2023)
32	Malasia	Not taxed	Alexey N (2023)
33	South korea	20%	Alexey N (2023)

America

34	U S A	0% if the individual's income does not reach \$ 41,675 per year and 15% when it exceeds this amount. 20% If a U.S. citizen has received more than \$ 459,750 within within 12 months.	Alexey N (2023)
35	El-salvado	Not taxed	Alexey N (2023)

African countries

36	Ghana	1.5%	Roselyne W (2024)
37	Kenya	3%	Roselyne W (2024)
38	Nigeria	Proposed 10% CGT after allowable deductions have been made	Roselyne W (2024)
39	South Africa		

Source : Researchers' survey, 2024

Discussion and Analysis

Base on the reviewed literatures and other available data the phenomenon of crypto-currency is still emerging and mostly used by individual investors. Although corporate bodies and multi nationals like Google use it as a means of exchange and even pay salaries and wages of its staffs. Its global appeal due to its exceptional features of privacy,fastness, accessibility,hedging opportunities etc. has made it indispensable. Thus, creating a negative and positive implications on public finance.

Adopting crypto asset as legal tender could adversely affect the government's social policy objectives, as high price swings could affect ordinary citizens as in the case of El-Salvador. Similarly, if tax proceeds or spending is

dominated in crypto state public finances will be too exposed and could put a country debt dynamics at risk as observed by Tatian M. (2022). Even without adopting it as a legal tender it can undermine tax revenue collections due to its Pseudonymous nature. Accessing withholding taxes and third-party information could be challenging to collect. it has the tendency creates economic in-activities in other sectors of the economy of poor countries because youths in countries like Nigeria will likely abandon education, agriculture, and other important crafts for crypto. Research has shown that dealing with cryto expand the scope of online swindles, black markets, organized crime, and funding terrorist activities. Although this argument is contradicted on the fact that such activities exist even before the advent of crypto. In unregulated situations crypto activities affects the

monetary policy of open market operations because it pose difficulties in controlling the out and inflow of local currencies. as such, creating speculative pressure for foreign dominated currencies which will likely create inflation in a unorganized import dominated economies like Nigeria citing the recent case of Binance March 2024.

But despite the risk associated with the unstable crypto, many countries with good tax regulations were able to generate significant amount of revenue. Which implies that taxation is a means of controlling adoption, and a source of revenue for several countries? By extension it also suggests that for some countries, it is a means to signal the riskiness of certain crypto assets, especially of unbacked tokens. By this exposure, the state is in a good position to advice individual investors. Therefore, it is obvious that stable crypto coins that fully satisfy legal and regulatory requirements could improve access to foreign exchange and assets, markets integrations, facilitating risk sharing, and solving balance of payments problems. In the future Cryptocurrencies could impact on changing patterns of the operations of government financial institutions as the use of crypto becomes more pronounced and acceptable. Thus creating stability around the markets and financial institutions.

Besides its implications on revenue generations the activities of crypto mining it reduce the problems of youth unemployment thereby creating a source

of capital for business instead of relying on governments jobs especially in countries like Nigeria. This can also be interpreted to mean it is a means of unbiased financial inclusiveness since it is technologically driven. It is also a good avenue for hedging local currencies of poor countries against inflations. More importantly, the use of crypto currency as a means of exchange and asset portends the needs to embrace technology and for countries to be prepared to embrace change in whatever means necessary. The use of blockchain technology can be advanced beyond crypto currency to agriculture, military, digital and governance.

Findings

Aside from individuals speculative investments, access to finance, lower cost of transactions, and transparency, the benefits of crypto-currency to public sector is enormous. As observed in the literatures from table 1.1 many public sectors have benefited in terms of revenue generation through taxation. However, its adoptions are embraced mostly by Multinational Corporation approved by residence countries. Based on its classifications (stable and unstable crypto-currencies) governments tax policies are in the directions of the unstable crypto-currencies. this implies a form of control and regulations that will reduce the level of online swindles and loss of revenue. At the same time, it implies, public sector can also benefit from the technology inherent in crypto-currency to build, operate, and supervise digital infrastructure to facilitate global payments. The public sector can

also incorporate these new technologies into apex bank currency (CBDC), digital identification systems, and trusted data sharing schemes.

However, there is no clear global consensus among policymakers on its adoption. In most cases it is considered as an asset and as an alternative means of exchange (virtual currency) . Which signifies a gradual acceptance in exploring the opportunities in the crypto-currency by various governments. While information about its fiscal implication on monetary policies due its volatility is still sacring away many countries in embracing its viability as a means of generating revenue. Apparently given its decentralized nature , the future of crypto -currency is bright from an individual's investors and public sector perspectives because technological change is inevitable.

Recommendations

- i. Countries should take advantage of the blockchain technology inherent in crypto -currencies to explore more revenue generation and also block financial leakages
- ii. Countries with large percentage of users like Nigeria may adopt the necessary regulatory tax measure for the purpose of revenue generation instead of banning it.
- iii. Countries that are completely aversive to it may develop its rival E-currency as an alternative otherwise loose will be leaving in the past.

Conclusion

Base on the findings, this study therefore concludes that depites the viability of crypto-currenc in generating revenue. individuals and government bodies are still skeptical on its viabiability as a means of generating revevue due to negative informations associated with it and poorly level of exposure to its technology. But the future of effective and efficient public finance lies in the use of crypto-currency technoly. As such the need for countries to quickly adopt it. Given its newness and level of acceptance further studies can be conducted on areas like , assessing the impact of crypto-currency on the growth of small scale industries in poor countries, the implications of crypto-currency on USD hegemony in the world economy, comparing the impact of stable and non-stable crypto on public financing of various governments.

References

- Alexey N. (2024) Taxation of cryptocurrencies in different countries in the world. www.iworld.com
- Alison (2024) understanding the meaning and mechanics of crypto-currency. Online certificate course.www.Alison.com
- Akintola A, & Question E (2023) Investigating the Relationship between Cryptocurrencies and Fixed income market in Nigeria. In Kingsley I.O,(Ed) *Economics of Crypto-currency : A book reading of Research Department of Centre Bank of Nigeria*. pp 271- 978-978-8714-28-6. www.cbn.gov.ng

- Banwo I. (2024) Taxation of Digital Assets in Nigeria: what taxpayers and businesses should expect. www.cryptoregulationsinnigeria.com.
- Ben B (2007) Blockchain and Public Finance in United State of America.
- Bhatia, H.L (2006). Meaning and Scope of Public Finance. Public Finance (25TH Edition). Vikas Publishing House PVT LTD.
- Cryptocurrency (2020) The Economics of Money and Selected Policy Issues Updated April 9, 2020 . Congressional Research Service. www.crsreports.congress.gov R45427
- Coursera (2023). Education for Employability. Four ways Universities can Prepare Students for Digital Advanced Workspace. www.coursera.org/campus.
- Daria (2020) Fintech in Africa, *An appreciation of the use of technology in corporate governance*. www.prosharefinancialreports.com
- David w. (2020) Blockchains and Distributed Ledger. In Bernard M (ed) *Tech Trends in Practice the 25 Technologies that are Driving the 4th Industrial Revolution*. www.wiley.com
- Equinix's 2023 Global Tech Trends Survey,
- Ezema, C. C., Igue. N. N. and Yunana, N. Z. (2023) Implications of Transactions in Cryptocurrencies for Monetary Policy in Nigeria 67 In Kingsley I.O,(Ed) *Economics of Crypto-currency : A book reading of Research Department of Centre Bank of Nigeria*. pp 271- 978-978-8714-28-6. www.cbn.gov.ng
- Geoffrey B., Todd K., Ken R., (2021) US Public finance : Cryptocurrencies May Boost Revenue. But are not Without Risk. www.Spglobalreport.com
- IMF (2023) G20 Note on the Macrofinancial Implications of Crypto Assets. www.imf.com
- Investopedia (2024) Where crypto-currency is legal and illegal. www.investopedianews.com
- Jame M (2023). Crypto asset in UAE. www.arabianbusinessnews.com
- Lennart A., Ingo, Jan M. W, Fred S.(2023) A Systematic Literature Review of Empirical Research on Stablecoins. [https:// doi.org/10.3390/fintech201000](https://doi.org/10.3390/fintech201000)
- Luchinna A. Novikova N.E., Zyatkov A.V, Lukasheva O.L. Melnikov V.A, & Yarotskaya E.V (2020) Cryptocurrencies in the Global Financial System: Problems and Ways to Overcome them. *Economics, Business and Management Research, volume 148* Proceedings of the Russian Conference on Digital Economy and Knowledge Management (RuDEcK 2020)
- Proshare (2023) Understanding the Economic of Change. www.prosharereport.com
- Roselyne W.(2024) Crypto Regulation In Africa.. www.Forbesdigitalassets.com
- Temitope A. (2023) Unlocking the potential: Artificial Intelligence Revolutionizing Nigeria's Banking Sector..
- Tatiana, M. (2022) Bitcoin and Public Finance in El-salvador: Economics and Finance Solution or Deepening of a pre-existing crisis. *friedrich-ebert-stiftung Perspective* ISSN 2413-6603. www.americacentral.fes.de
- Olusegun, T. S., Evbuomwan, O. and Asuzu, O. C (2023) Assessing the Implications of Central Bank Digital Currency for Financial System Stability: The Case of the eNaira 99 In Kingsley I.O,(Ed) *Economics of Crypto-currency : A book reading of Research Department of Centre Bank of Nigeria*. pp 271- 978-978-8714-28-6. www.cbn.gov.ng
- World Bank (2018) Cryptocurrencies and Blockchain: Hype or Transformational Technologies. *International Bank for*

Reconstruction and Development. ISBN 978-1-4648-1299-6. www.ecaeconomics.com

William J. L. (2022) Bitcoin and the Future of Digital Payments. *The Independent Review*, vol. 20, no. 3 (winter 2016), p. 397. 4 U.S. Securities and Exchange Commission, "Investor Bulletin: Initial Coin Offerings,

Siddiqui M.N (2021) *Riba, Bank Interest and the Rationale of its Prohibition*. Markazi Maktaba Publishersn, New Delhi. ISBN: 9960-32-145-2

Yakubu, J. and Samuel G. T (2023) Examining the Relationship between Bitcoin and Stock Returns in Nigeria. In Kingsley I.O,(Ed) *Economics of Cryptocurrency : A book reading of Research Department of Centre Bank of Nigeria*. pp 271- 978-978-8714-28-6. www.cbn.gov.