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The Effectiveness of Fiat Fractional Reserve system and the role of Centralised Cryptocurrency on Economic Stability in Nigeria's Digital Economic System

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ABSTRACT: The study is aimed at assessing the effectiveness of fiat fractional reserve system and the role of centralised cryptocurrency on economic stability in Nigeria's digital economic system The study adopted a qualitative means of data collection. The study uses Nigeria as the study area which was selected using purposive sampling technique. The qualitative information was collected using a semi-structured interview questions from the sampled participants. The collected information from qualitative source was analysed using thematic analyses with the aid of AtlasTi. The study found that the major challenges of the current fiat and fractional reserve system are rising cost of living, private money creation and overwhelming increase in public debt caused by interest rate manipulation. It was also found that the adoption of an alternate transactional system is timing considering the advancement in technology as the block-chain aided technology system will be a better option considering its security, transparency, controllability and traceability of all transactions operated on it. The study recommends that government especially policy makers should think on improving or modifying the current system so as to have a better system that will address the private money creation, unregulated transaction, interest rate manipulation. On the same vein the study recommends that centralized cryptocurrency transactional system should be adopted as a central transactional system which could be capable of minimizing oversupply of money through eradicating private money creation and interest rate manipulation.

Keywords: Blockchain, Cryptocurrecny, Technology Advancement, Monetary System.

INTRODUCTION

Technological advancement and widespread Internet availability have caused many changes in the transactional system when cashless transactions are becoming the new norm. The revolution of financial technology is also increasingly putting banks aside when borrowers (users) are directly connected to the funders or lenders. The technology has made the costs of borrowing to be cheaper than what it used to be with the removal of intermediary roles (such as bank's functions)(Horobet et al., 2024). For example, the introduction of wallet and cryptocurrency has eliminated the middle parties' role and consequently reducing the cost and speed of the transactions significantly. Cryptocurrency has an intrinsic or store of value in the same way that

gold has. Its value does not depreciate much over time. The creation of more cryptocurrency units (via mining) would not result in loss of value as the cryptocurrency has intrinsic value and the total unit of cryptocurrency creation is already pre-determined (Hileman and Rauchs, 2017 and Madeira, 2020). These features make cryptocurrency suitable and attractive as a medium of exchange. However, to qualify as money, features such as durability, portability, divisibility, uniformity, limited supply, and general acceptance as a payment method must be met. Whilst the first five characteristics could easily be met by cryptocurrency, the last attribute is still a challenge as society at large barely understand about cryptocurrency. At present, only limited merchants and companies would accept cryptocurrency in settlement although experts are optimistic about its potential (Madeira, 2020). The major obstacle for cryptocurrency to become mainstream money is due to its present complicated system that is socially inept (according to Trenchev as cited by Madeira (2020).). Currently, cryptocurrency is still considered as a niche product that would easily satisfy certain demographic groups' needs, while it is an expensive engagement for some others particularly to small traders. Furthermore, network congestion and fee preferential market (higher fee transactions are given preferential treatment) are among the top challenges that need to be improved upon. A second layer network is being created to cater to micro-transactions to avoid congestion and improves efficiency.

The presence of multiple cryptocurrencies has paved a way for a global payment system to be established. Facebook Inc. announced its plan to revolutionise the money transfer system with the Libra project. Aside from the plan to introduce a more stable and less speculative Libra token, the transfer system will also be based upon an authorised blockchain network of Libra Association that would verify transactions and token ownership. Permission use of the blockchain is effectively making the Libra Association as a "de facto central bank". Responses from the governments were overwhelming and many central banks responded to the Libra plan as it is impinging on the central banks' sovereignty. France, Germany, and the European Union Central Bank (EUCB) expressed their concerns over the risks posed to the European financial sector that could block Libra authorisation in Europe while claiming that the EUCB has its long-term plan of alternative public cryptocurrency(Guarascio, 2019). The Libra announcement has sparked and contributed to the speed of responses by countries on cryptocurrency, which was previously left unaided for more development to gather pace.

Given the cryptocurrency development around the world, the flaws of the present transactional system and potential of using Islamic Finance principles, this may be an opportune time for Nigeria to leap frog the financial monetary innovation to bring about a more sustainable and equitable monetary system. But before such an innovation could be put into place, a fundamental and thorough examination and proofs of such flaws are needed. Thus, this study intends to examine how a centralised cryptocurrency as an alternative transactional system could address the present flaws in the fiat fractional reserve system such as over creation of the money supply with no real asset backing, persistent increase in debt that has significantly affected the real economy and diminishing value of money and increasing costs of living. The study is aimed at showing evidence of the shortcomings of the present (fiat fractional reserve) monetary system in terms and the visibility of centralized cryptocurrency as an alternate system in Nigeria.

Development around the world has also seen the impacts of e-commerce and the digital economy getting more pronounced with less reliance on cash as a method of payment and some pilot projects are already underway to introduce government-backed virtual currencies. Sweden, Bahamas, and China (to mention a few examples) are already piloting their respective central bank digital currencies (CBDC) albeit at varying levels of testing progress, reaffirming the state's role in the payment market. Sweden, e-krona, is being evaluated as potential digital money to replace cash whose usage has rapidly declined in Sweden with just 1% of its transactions are done in cash (value of outstanding cash as a percentage to GDP). While the Bahamas initiated Sand Dollar as a digital fiat currency to curb violent crimes and reduce security and insurance costs associated with keeping physical cash; whereas China's plan to introduce its sovereign digital money to control the total volume of money supply and to be able to monitor its citizen real spending apart from controlling illegal and vice activities(Dyson et al., 2014).

Generally, many countries are planning to introduce some forms of sovereign digital money for the public to use although digital money has long existed between central banks and financial institutions. The decision to introduce sovereign digital money is mainly due to the rapid decline in cash usage and the considerable success of e-commerce platforms such as Amazon, Alibaba, Tencent, etc, and also the need to reduce reliance on foreign payment infrastructure as the case of Sweden (Söderberg, 2019). The presence of sovereign digital money facilitates electronic money transfers and increases the efficiency of online payments, e-commerce, and digital trade by reducing transaction costs. Banks can also lower their cost structures, as digital money does not require physical storage and security costs associated with the storage. Though the development is interesting, the sovereign digital money would still not solve the present flaws in the fiat fractional reserve system as long as banks can create money multipliers that increase the amount of money supply in circulation. The economy would still arguably be susceptible to cyclical recessions, as the money supply would still not match the real economic activities; resulting in higher inflation and subsequently increased costs of living including exorbitantly high housing prices.

The long-term strategy of these countries is to launch their equivalent of state-cryptocurrency as part of their grandeur plan to link domestic payments and transfers across a seamless digital payment infrastructure. The Libra development serves as a wake-up call for central banks throughout the world reminding them of risks to their public monetary sovereignty if alternative public cryptocurrency is not made available. Traditional banks could be at the risk of disruption when individuals and businesses engage more in cryptocurrency leading to less need to deposit and extended loans. This disruption would help to curb the banks' ability to create money out of thin air as mentioned by (Werner, 2014). The European Central Bank is working on a long-term plan to launch a public digital currency that would be similar to the Libra project and could accelerate the development of centralised cryptocurrency further. The future of cryptocurrency remains exciting as nations discover the limitations of the present transactional system and are addressing the challenges as technology and development advances(Liu et al., 2024; Shi et al., 2024).

Since abandoning the gold standard and with the introduction of fiat money and fractional reserve requirement (collapse of the Brenton Wood system in 1973), the world has witnessed a cyclical

recession about every 10-year cycle. Experts attributed the cyclical recessions to the imbalances in money supply and real economic activities (Carson, 2020; Werner, 2016, 2018). Whenever a crisis (recession) hit, the economy would contract to correct the imbalances and in the due process causing many people to become poorer and even drive the poor into poverty when the costs of living increase with the value of money getting smaller. The imbalances in the economy are largely due to the over-creation of the money supply with no real asset backing leading to huge bubbles formation. The excess money supply is a result of credit creation practices by private banks through the fractional reserve requirement. The requirement permits private banks to create more money out of new loans over money multiplier effects. In times of recession, the value of money diminishes as it has no asset backing but just a government promise and guarantee of value (fiat money).

Monetary system

Central banks have been doing their best in controlling and regulating the money supply (money in circulation) through the formulated policies, but the reality shows that countries are being faced with over-supply of money (too much money in circulation) which has caused inflation, and this has resulted in serious defect in the living condition of the people as captured in quantity theory of money. The further explains that inflation is majorly triggered by the increase in money supply especially when there is no equivalent increase in the real economic output (Hülsmann, 2014). The most challenging aspect for policy makers in every system is how to balance between inflation and recession because of the facts that too much money in circulation causes inflation otherwise recession is triggered. This is the scenario with most of the monetary systems operated since the major tool used in regulating the money in circulation is interest rate manipulation which will either encourage or discourage lending.

The money supply issue started to escalate significantly after the collapse of Bretton Wood system in 1973 when the world currency was untied from gold backing and when the fiat money together with fractional reserve system came to being. The gold backing system could not accommodate the larger demand for expansion due to limited gold production worldwide. The world opted for fiat and fractional reserve system similar to that operated during Kublai Khan and Goldsmith systems where money could be created freely (without having to gold backed) and since then the economy has witnessed the oversupply of money not in tandem with the real economic output

Control of money supply is paramount in the national policy and it has been drawing serious attention over time because it was seen of having a tremendous effect that have direct bearing on the living condition of the people and the healthiness of the economy. It is against this, that Central bank uses some tools to regulate the money supply because an uncontrolled money supply will cause harm to economic activity of the nation and it will generate hardship for the people. This hardship has been linked to fractional reserve system.

Fractional Reserve system

The current monetary system which is popularly known as fractional reserve monetary system where commercial/private banks exercise the power of creating new money from customers

deposit by way of lending the deposited amount as loans to other household or cooperation. It was estimated by the bank of England in 2016 that more than 95% of the money used by people and businesses in the UK exists in the form of bank deposits at commercial banks. On the other hand, only less than 5% of the money in circulation exists as physical cash that is created by the state (fiat money), via central banks such as the Bank Negara Nigeria and this situation exists in most of the countries around the globe.

In the fractional reserve system new money were created through giving out loans which are numbers held as bank deposits that usually appear as in bank accounts, through the normal accounting process of asset and liability (England, 2014). When a bank gives out a loan to household or cooperation, in actual sense thousands of dollars will not be given to him on the spot but the bank credits the customers' bank account with a bank deposit of the size of the requested and agreed amount (Ravn, 2015). Using this process, a new money was created equivalent to the amount of the loan. However, it is good to note that the described process of money creation contradicts our basic understanding that banks can only lend out pre-existing money and bank deposits are simply a record of how much the bank itself owes its customers and they are a liability of the bank, not an asset that could be lent out (McLeay et al., 2014).

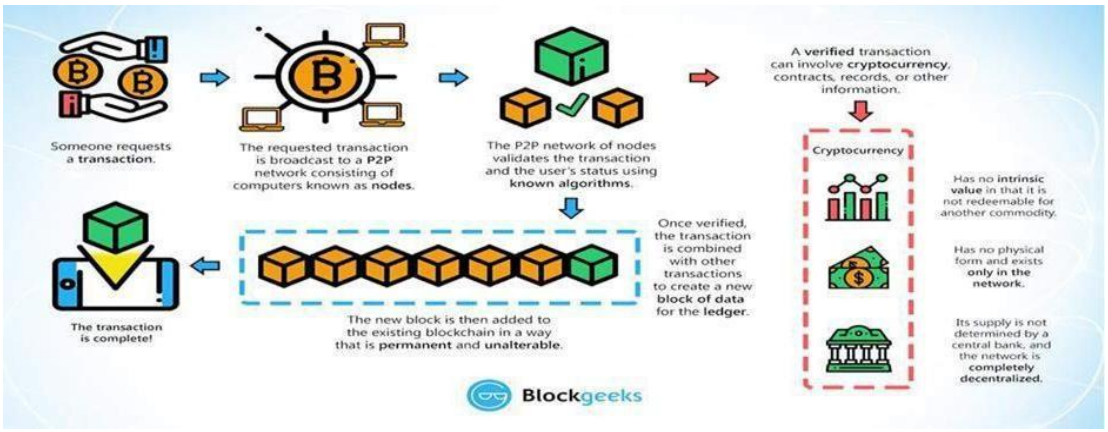
Countries over the world have provided a support for the money creation by the private banks through establishment of certain agencies such as Financial Services Compensation Scheme (UK), Federal Deposit Insurance Corporation (USA), and National Deposit insurance corporation (Nigeria) that provides liquidity guarantees as Lender of Last Resort function which ensure that banks can always borrow from the central bank to ensure that they can settle their payments (Yi, 2019). The agencies provide credit guarantees of promising to repay deposits in the event of a bank failure, effectively guaranteeing the liabilities of private companies with the full backing of the state (Pozsar et al., 2010).

The major characteristics of fractional reserve banking system is money creation through extending loans. The central bank of a country has the power to create money out of thin air which is termed as fiat money thereafter such created money is moved to commercial banks through several means as could be initiated by the central bank which can either be through government securities and stock exchange with the bank (Brunnermeier & Niepelt, 2019). The commercial banks will lend out part of the money to individuals or firm who are in need of the funds to finance their business activities by keeping a fraction of the money in their accounts (Palma, 2018). It can be clearly seen that money is created originally by the government (only 5% as the per the UK case reported by the Bank of England) and it further created through lending and re-lending among banks (95% in UK as reported by the Bank of England) as maintained by the mainstream economic theory. They believe that money is exogenously created by central banks as it determines the seal of the money creation through the reserve requirements and it is coordinated through money multiplier which determine maximum amount of money to be created in the economy this has triggered a tremendous innovation in monetary and transactional systems.

Cryptocurrency Transactional System

Cryptocurrency is an internet-based medium of exchange invented by Satoshi Nakamoto in 2008 which uses cryptographical functions to conduct financial transactions that leverages blockchain technology to gain decentralization, transparency, and immutability(Hassan et al., 2024). Cryptocurrency is not controlled by any central authority and it is free from government control and interference. It can also be seen as a limited entry in a data base which no one can change it without fulfilling specific conditions. Cryptocurrency is a type of digital money that uses distributed networks and publicly available transaction logs, and the key ideas of cryptography are combined with the monetary system to create a safe, anonymous and potentially stable virtual currency (Drobyazko et al., 2019). For better understanding, the cryptocurrency operation is presented in figure 1.

Figure 1: How cryptocurrency works



Source: Blockgreek.com

Practically, cryptocurrencies have no intrinsic value because the prices of the currencies are based on speculation as evidenced by a consistent rise in value especially the Bitcoin. The Bitcoin's price per unit has risen from a value of $0 in 2009 to a value of $9,624.39 in 2019 with a market capitalization of $173,368,047,191 out of the total cryptocurrencies' capitalization of $253,281,617,093 (https://coinmarketcap.com/October2019). The users of the currencies are convinced that its value will forever increase as the present price of the currency is determined solely by expectations about its future price and this makes it reacts highly elastically to changes in the expectations of market participants and is reflected in extreme price volatility (Berentsen & Schar, 2018). The currency rally around these major qualities (irreversibility, pseudonymous, fast, global, highly secured and permission-less) as captured by (Houben & Snyers, 2018). Cryptocurrency is not without its disadvantages and potential problems. Possible challenges of the cryptocurrency operation include:

- Danger of bubble as in the case of internet (dotcom) bubble of 2002. This would arise as a result of constant increase in value and a high expectation of future earnings. Instance of Bitcoin which rose from $0 in 2009 to over $9,000 in 2019.

- Control is in the hands of individual (miners) who can manipulate it for personal benefit as in the case of Goldsmith.
- Danger of it used as a means of money laundry, tax evasion and terrorist financing since its operation is cross boarder and no specific regulation is attached.
- Exposure to hackers as cryptocurrency is exchanged for traditional money (fiat) and as at the end of 2019 cybercriminals have stolen about 1.2 billion US dollars through either Phishing or Hacking (Yunin & Shevchenko, 2019).

The centralized cryptocurrency is aimed at replicating the operation of cryptocurrency method of transaction by providing a central transactional system, which will work on a blockchain technology that is seen to have better security, transparency, and traceability of all transactions. The model is targeted at simplifying the transaction process by breaching the bureaucracy and reducing transaction cost. It will also aid monitoring and regulating of monetary issues in the economy by the state, which will minimise national debt, tax evasion and money laundering among others.

Tax evasion is the general term for efforts by individual, firms, corporations, trust and other entities to evade taxes by illegal means(Palil et al., 2016). Tax evasion usually entails taxpayers deliberately misrepresenting or concealing the true state of their affairs to the tax authorities to reduce their tax liability and includes in particular, dishonest tax reporting. International Monetary Fund (IMF) described Money Laundering (ML) as "a process by which the illicit source of assets obtained or generated by criminal activity is concealed to obscure the link between the funds and the original crime activity (IMF 2007). The purpose of ML is to create the appearance that money generated from criminal offences has a legitimate source which may subsequently be used to fund further crime.

METHOD

This research utilizes a focus group discussion and semi-structured interviews with major stakeholders relating to transactional system. The research used purposive sampling techniques to identify three (3) participants from each of the three (3) major stakeholders of regulators (from Central Bank of Nigeria), academicians (from Bayero University Kano, University of Maiduguri and University of Nigeria Nsuka) and technologists (from Nigeria Institute of Technology Development Agency NITDA) that have understanding of monetary transactional policy as at its application. The findings from the proposed focus group refined issues that was included in the semi structured interviews. The collected qualitative information and facts was analyzed using coding, transcription and thematic analysis with the aid of AtlasTi.

RESULT AND DISCUSSION

This section covers the presentation of result from participant's response which was transcribed into codes, grouped into category and formed into themes for easy interpretation. The interview response was transformed to written extract through a manual transcription with the aid of Microsoft office transcription device. The interview covers 27 responses from 9 participants which emanated from the eight (6) semi-structured questions.

. Table 1
Alternate Transactional System

Themes	Categorization	Generated codes
Alternate transactional system	Technology advanced transactional system	• Minimizing the role of middle men • Accessibility of new products and businesses • Increased speed of transactions • Minimized transaction cost and difficulties • Simplified business process
	Government controlled money creation System	• Controlled technology system • Foreign investment driven system • Highly secured and regulated system • Accessibility of new products and businesses • Increased speed of transactions • Minimized transaction cost and difficulties
	Block-chain aided technology System	• Control of public debt and double spending • Regulate and Control of monetary activities • Accessibility to cross boarder transaction • Facilitate digital economic system • Control fluctuation in currency value

Source: Thematic analysis (2024)

The transcripts were analyzed and eighty-seven (87) codes were generated from the responses of the participants manually using Microsoft office and excel. The generated codes were grouped into of two (2) related category which captures the fundamental issues asked during the interview exercise.

The findings from the participants that the current system is the major contributor to the rising cost of living are in alignment with the basic economic reality that attributed oversupply of money to consistent rise in the prices of goods and services (inflation) which is supported by the transcribed interview response of the participants collectively opined that fiat and fractional reserve components of money supply has caused tremendous raised in the prices of goods and

service together with consequential inequality among individuals in Nigeria. This opinion is agreement with the classical economic theory which postulates that an uncontrolled increase in money supply of a given economy will lead to rise in the prices of major goods and services in the society. The opinion of the participants supported by the quantity theory of money, credit creation theory and a number of literatures such as Scott-Smith & Rofe (2017) who concludes in their individual findings that interest rate, oversupply of money and rising cost of goods and services has a detrimental consequence on the individual household and economy at large (Nwankwor et al., 2022; Olofinlade et al., 2020; Singh, 2020).

The participants also opined that the adoption of block chain aided transactional system which is the key tool of cryptocurrency operation will curtail double spending in transaction and also help government in controlling of monetary related activities in the economy. This indicates that with the adoption of blockchain aided transactional system it will go a long way in addressing the critical economic consequences experienced under the current system. On the hand participants submitted that centralized crypto transactional system is visible considering the wide acceptability and patronage of the decentralized system. They are of the opinion that if the system could be adopted and properly handled it will minimize the economic misfortunes and the security challenges experienced under the fractional reserve and even the problem of the decentralized crypto transactional system which are detrimental to the economy. This finding is inline with finding of economic researchers like (Joo, Nishikawa & Dandapani 2019) and the resolutions of Kuala Lumpur summit and the Economic Community of West African States resolution of having a unified currency among the member countries so also to breach the economic barriers among the member countries. The finding is supporting the Nigerian government transformation of digital economy where a concrete step is being taking to digitalize the whole economic and transactional activities in the countries so as to holistically move to industrial revolution 4.0.

CONCLUSION

The study found that there is need to have an alternate transactional system in the form of government-controlled credit/money creation system, technology advanced transactional system and block-chain aided transactional system. The alternate system will foster proper control of monetary activities especially the aspect of credit creation by private individual which has caused oversupply of money. The system will reduce transactional cost, minimize delay, eradicate bureaucracy and provide a simplified method of transactions.

The practical implication of the study findings is that alternate transactional system will provide a better security, transparency, controllability and traceability of all transactions which consequently curtail excess money supply, tax evasion, terrorist financing money laundry and the rising cost of living together with provision of stability in the economy.

The study conclude that the major challenges faced by the current fiat and fractional reserve system are rising cost of living as a result of oversupply of money, private money creation by private banks and overwhelming increase in public debt which arise from interest rate manipulation. This could lead to

consistent recession, financial and economic crises, inequality and the general economic instability. The study on the other hand also concludes that there is need for policy makers to consider moving the current monetary system to a blockchain aided technology system that will replicate the operation a decentralized crypto currency operation as a government centralized crypto transactional (monetary) system. This will go a long way in controlling money supply, private money creation and interest rate manipulation which will consequently provide better living condition, simplified, easy and cost-efficient transactions.

This study recommends that government especially policy should see on improving or modifying the current system so as to have a better system that will address the private money creation, unregulated transaction, interest rate manipulation which are viewed as the major contributors to rising cost of living, economic instability and consistent recessions and economic crises. It was also recommended that centralized cryptocurrency transactional system should adopted as a central transactional system which could be capable of minimizing oversupply of money through eradicating private money creation and interest rate manipulation. Ultimately, the system will provide proper regulation and control mechanism of all transaction which will help in minimizing money laundry, tax evasion and terrorist financing.

Further research is needed to look at ways and means of dealing with consistent recessions and economic crises in developed countries which are viewed to have caused deficiencies in national transactional system. There is need to study the workability of digital currency in developed countries which will pave way for its adoption in other developing countries. Likewise, researchers may proceed with the study through providing the adoption strategy of centralized crypto transactional system.

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