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COMMERCIAL BANKS VS BITCOINS: A COMPARATIVE ANALYSIS FOR THE INDUSTRIALIZATION DRIVE AND PRODUCTIVITY IN NIGERIA

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ABSTRACT:
This paper examines the cost of transacting with commercial banks and the cost of a large scale adoption of Bitcoins in Nigeria to provide a comparative analysis as to which medium of transaction best promotes industrialization in Nigeria. The direct costs of transacting with both mediums were estimated and compared for the years 2015 and 2016 while the indirect costs were outlined. A counterfactual estimation was also conducted to calculate the total cost of using Bitcoins for all financial transactions in Nigeria for the study period. The findings suggest that Bitcoin transactions are relatively cheaper and as such should provide a better platform for promoting industrialization in Nigeria. However, the non-accounting costs of transacting with both mediums potentially provide alternative conclusions. We recommend further studies on the non-accounting costs of transacting with Bitcoins.

Keywords: *Bitcoin, Banks, Block-chain technology, Industrialization, MSME, Productivity and Commercial.*

Introduction

The rapid economic development experienced by the East Asian Tiger economies of South Korea, Taiwan, Hong Kong and Singapore and now followed by many other countries including China and India shows that

industrialisation is integral in the quest for sustained economic growth. It is therefore clear that a "demonstration effect" is crucial for developing economies to chart a path towards achieving rapid growth. It is sad however that Nigeria is still characterised by slow industrial development resulting from low export diversification and structural transformation despite the domination of the subject in economic discussions in recent years. In Nigeria, the apparent failure of the sector in driving growth has been hampered by various constraints including inadequate financing and dearth of long term capital. Thus the industrial sector has continued to experience underutilisation/underdevelopment due to their heavy dependence on imports, foreign exchange constraints (for procurement of raw materials), high cost of operations, and inadequate energy supply.

The financial system has a crucial role to play in the industrialisation process. The financial sector provides six major functions that are important both at the firm level and the economy as a whole (Todaro & Smith, 2011) – providing payment services; matching savers and investors; generating and distributing information; allocating credit efficiently; pricing, pooling and trading risks, and increasing asset liquidity. With technological advancements and the evolution of the financial sector, banks perform many more functions for which they charge different fees – with a higher charge on transactions beyond certain limits. Both technological and financial innovations have driven modern economic growth and have facilitated large investments in the industrial sector. The restrictions of loans to a few large borrowers, together with the widespread existence of high inflation, growing budget deficits, and negative real interest rates, led to a serious "credit crunch" among developing countries in the 1980s (Fry, 1988; World Bank, 1991).

In addition to the risks of commercial banking and financial intermediaries been subject to numerous lending restrictions and mandatory interest rate ceilings on loanable funds, other problems of commercial banking were the associated risks of fiat currency. The inflationary nature of fiat money and its potential of dropping to zero value, eroded the confidence of investors. This created a need for alternatives to traditional banking. A number of traders and investors have adopted non-fiat currencies in their portfolios to help protect them from the movements and dangers of paper money. The European Central Bank (ECB, 2015) outlined three alternatives to fiat currency adopted: physical gold, physical silver and pecunix. In addition to these financial alternatives, one of

the most exciting new developments has been the rise of "Bitcoin". The use of the virtual currency, Bitcoin, as a substitute to centralised banking is gaining momentum globally due to its speed, convenience and relatively lower cost of transactions. Increasingly, Bitcoin has become a popular alternative to using only fiat currency.

According to Roger Ver, CEO Bitcoin.com cited in Badev & Chen (2014),

> *"Bitcoin is one of the most important inventions in all of human history. For the first time ever, anyone can send or receive any amount of money with anyone else, anywhere on the planet, conveniently and without restriction. It's the dawn of a better, more free world."*

Bitcoin is an open source crypto currency system, which operates without a centralized authority. All the people who use bitcoin are pseudonymous and the security of Bitcoin comes from the underlying mechanism called the Blockchain Technology. Blockchain is a decentralized and distributed database where all the transactions are recorded in a ledger (Sams, 2015). Bitcoins can be used to buy merchandise anonymously. In addition, international payments are easy and cheap because Bitcoins are not tied to any country or subject to regulation. It is also important to the functioning of small businesses because there are no credit card fees. Others buy Bitcoins as an investment, hoping that they will appreciate in value. People can send Bitcoins to each other using mobile apps or their computers – similar to sending cash digitally. It operates without a centralized authority, so the transaction fee will be lower than the traditional financial institutions.

How then is Bitcoin important in supplementing or supplanting commercial banks in a bid to efficiently drive industrialisation in Nigeria? It should be noted that over 90% of industries in Nigeria are in the Micro, Small and Medium Scale Enterprise (MSME) category (NBS, SMEDAN, 2010).This is because the apparent failure of large-scale import substituting industries to ensure sustained growth and development in Nigeria prompted the government to shift priorities and emphasis to the promotion MSMEs. A major challenge however facing MSMEs is finance (Anyawu, et al, 2010). Inadequate financing has been identified as the most serious problem of establishing and running MSMEs which is compounded by numerous other challenges, among which are high fees and charges in undertaking financial transactions. It is therefore pertinent

to seek alternatives to traditional banking "in Nigeria" for financing transactions. In light of the drive for industrialization in Nigeria, it is important to find out if the current banking structure in Nigeria performs better at promoting industrialization relative to the large-scale adoption of Bitcoins.

The study therefore intends to evaluate which will be more effective in promoting industrializing in Nigeria – commercial banking or Bitcoins. The study thus examines the following: first, to identify the relative transaction costs using traditional banking and Bitcoins by individuals and MSMEs in Nigeria; second, to compare the amount lost by individuals and MSMEs to banks and Bitcoins in a counterfactual analysis; and finally, contrast both economic and accounting costs of commercial banks and Bitcoins in Nigeria. The rest of the paper is structured as follows. Section two presents a brief conceptualisation of Bitcoins, blockchain technology alongside its challenges and limitations. Section three specifies the methodology of the study involving transaction costs of operating traditional bank accounts against Bitcoin wallets in driving industrialization. Section four concludes the paper and attempts some policy recommendations.

Conceptual Clarifications

Bitcoins

What are Bitcoins?

Bitcoin is a form of digital currency, created and held electronically. It is not controlled by anyone, neither is it printed, like the naira or cedis. They are produced by people, and increasingly businesses, running computers all around the world, using software that solves mathematical problems. Bitcoin can be used to buy things electronically and is traded digitally – which makes it conventional like paper currency. However, it is different from conventional money because it is *decentralized*. No single institution controls the Bitcoin network. A software developer called **Satoshi Nakamoto** proposed Bitcoin, and described it as "A Peer-to-Peer Electronic Cash System" which was an electronic payment system based on mathematical proof (Hileman & Rauchs, 2017). The idea was to produce a currency independent of any central authority, transferable electronically, more or less instantly, with very low transaction fees.

Bitcoin is a consensus network that enables a new payment system and completely digital money. It is the first decentralized peer-to-peer payment

network that is powered by its users with no central authority or middlemen. From a user perspective, Bitcoin is perhaps best described as 'cash for the Internet', but Bitcoin can also be seen as the most prominent triple entry bookkeeping system in existence. It is also known as digital cash, cryptocurrency, an international payment network, the internet of money. An important feature of Bitcoin is that it requires no central servers or third-party clearing houses to settle transactions – all payments are peer-to-peer (P2P) and are settled in about 10 minutes – unlike credit card payments, which can take weeks or months before they are settled (www.bitcoin.com).

All Bitcoin transactions are recorded permanently on a distributed ledger called the "blockchain" – this ledger is shared between all full Bitcoin "miners" and "nodes" around the world, and is publicly-viewable. These miners and nodes verify transactions and keep the network secure. The Bitcoin protocol is also hard-limited to 21 million Bitcoins, meaning that no more than that can ever be created (Sams, 2015). This means that no central bank, individual or government can come along and simply 'print' more Bitcoins when it suits them. In this sense Bitcoin is a deflationary currency, and as such is likely to grow in value based on this property alone. Bitcoin is still a cutting-edge experiment in technology and economics, its myriad potential, purposes and applications are yet to be decided.

Productivity

What is Productivity?

The definition of productivity usually varies from economists and business managers. The economists define productivity as the ratio of output to input by industry groups or sectors of the economy.

Productivity = output/ input.

Productivity is also defined as the amount of output produced by each unit of input, where outputs are measured in physical units. However, business managers tend to reject the economists' definition and view productivity as a measure of overall production efficiency, effectiveness, and performance of industrial organisation. They believe that productivity means quality of output, workmanship, adherence to standards, absence of complaints, customer satisfaction, absentee and turnover rates, absence of disruption, trouble and other evidence of difficulty in organisations, as well as such quantitative measurements as units produced or volume of sales.

Block Chain

What is Block Chain?

Bitcoin is dependent on something known as "the blockchain". This underlies and structures the Bitcoin system. Simply put, the blockchain is a public immutable and decentralized global ledger powered by Bitcoin. The blockchain is the vertebrae of the protocol and the glue that holds the network together (Chiu & Wong, 2014). It is simply a vast, distributed public ledger of account. It keeps track of every transaction ever made in the network, and all transactions are time stamped and verified by network miners. This is how it works: miners with specialized computers compete to solve mathematical puzzles with other computers, and once they solve a puzzle they are awarded with some Bitcoin, but they also add a "block" of completed transactions to the blockchain for future viewing and verifiability. Once a block is added to the chain the cycle repeats itself, and the computers continue to compete to solve these difficult problems. Every transaction on the block-chain is completely transparent and accounted for in its log. Anyone can see the public keys of any transaction they want (although there are no names associated with transactions). One could go all the way back and view the very first transactions ever made on the first block ever created. This block was called, "The Genesis Block".

How is the Bitcoin Block-chain Different from Banking Ledgers?

In the block-chain, transactions are part of blocks. Each block refers to a previous block adding to previous proofs-of-work, which forms a chain of blocks. Once a chain is formed, it confirms all previous Bitcoin transactions and secures the network. This not only helps solve the double-spending problem, but it opens the doors for a myriad of powerful applications. Banks for many years have also used ledgers to track and manage financial transactions; however, bank ledgers are historically private and closed. The general public cannot view them, does not have access to them, and they are centrally managed by the financial institutions; essentially they are permissioned ledgers where banks oversee them with impunity.

The difference between the two is that the Bitcoin blockchain is completely decentralized and open source. This means that people do not have to rely on or trust the central bank to keep track of the transactions. The peer-to-peer blockchain technology can keep track of all the transactions without the fear of having them erased, lost or even seized. The blockchain is permission-less,

anyone can participate around the world. Furthermore, the blockchain, because of its open source nature, is more versatile and programmable than central banking ledgers. If programmers need new functionality on the blockchain, they can simply innovate on top of already existing software through consensus. This is difficult for central banks because of all of their regulations and central points of failure.

Issues and Limitations of Blockchain

There are treacherous passes in any technological revolution. Some people in the blockchain industry have pointed out that blockchain has become overhyped, when, in reality, the technology has limitations and is inappropriate for many digital interactions. However, through research and development, success and failure, and trial and error, the following issues and limitations of blockchains have been identified (Bank of France, 2013; Hileman & Rauchs, 2017; Badev & Chen, 2014).

a. **Complexity**

Blockchain technology has made cryptography more mainstream, but the highly specialized industry is full of jargon which makes the concept and workability more difficult to understand.

b. **Network Size**

Blockchains (like all distributed systems) are not so much resistant to bad actors as they are "anti-fragile" – that is, they respond to attacks and grow stronger. This requires a large network of users, however. If a blockchain is not a robust network with a widely distributed grid of nodes, it becomes more difficult to reap the full benefit.

c. Transaction Costs, Network Speed

Bitcoin currently has notable transaction costs after being touted as 'near free' for the first few years of its existence. As of late 2016, it can only process about seven transactions per second, and each transaction costs about $0.20 and can only store 80 bytes of data. There is also the politically charged aspect of using the Bitcoin blockchain, not for transactions, but as a store of information. This is the question of ''bloating' and is often frowned upon because it forces miners to perpetually reprocess and rerecord the information.

d. **Human Error**

If a blockchain is used as a database, the information going into the database needs to be of high quality. The data stored on a blockchain is not inherently trustworthy, so events need to be recorded accurately in the first place. The phrase 'garbage in, garbage out' holds true in a blockchain system of record, just as with a centralized database.

e. **Unavoidable Security Flaw**

There is one notable security flaw in Bitcoin and other blockchains: if more than half of the computers working as nodes to service the network tell a lie, the lie will become the truth. This is called a '51% attack' and was highlighted by Satoshi Nakamoto when he launched Bitcoin. For this reason, Bitcoin mining pools are monitored closely by the community, ensuring no one unknowingly gains such network influence.

f. **Politics**

Because blockchain protocols offer an opportunity to digitize governance models, and because miners are essentially forming another type of incentivized governance model, there have been ample opportunities for public disagreements between different community sectors.These disagreements are a notable feature of the blockchain industry and are expressed most clearly around the question or event of 'forking' a blockchain, a process that involves updating the blockchain protocol when a majority of a blockchain's users have agreed to it.These debates can be very technical, and sometimes heated, but are informative for those interested in the mixture of democracy, consensus and new opportunities for governance experimentation that blockchain technology is opening up.

Highlights of Bitcoins Transaction Globally

Hileman & Rauchs (2017) were the first to systematically investigate key cryptocurrency industry sectors by collecting empirical, non-public data. The study gathered survey data from nearly 150 cryptocurrency companies and individuals, and it covers 38 countries from five world regions. The study details the key industry sectors that have emerged and the different entities that inhabit them. The summary of their study is highlighted below:

- The current number of unique active users of cryptocurrency wallets is estimated to be between 2.9 million and 5.8 million.

- The lines between the different cryptocurrency industry sectors are increasingly blurred: 31% of cryptocurrency companies surveyed are operating across two cryptocurrency industry sectors or more, giving rise to an increasing number of universal cryptocurrency companies.
- At least 1,876 people are working full-time in the cryptocurrency industry, and the actual total figure is likely well above two thousand when large mining organisations and other organizations that did not provide headcount figures are added.
- Average security headcount and costs for payment companies and exchanges as a percentage of total headcount/operating expenses are similar, but significantly higher for wallets.

Exchanges

- The exchanges sector has the highest number of operating entities and employs more people than any other industry sector covered in the study; a significant geographical dispersion of exchanges is observed.
- 52% of small exchanges hold a formal government license compared to only 35% of large exchanges.
- On average, security headcount corresponds to 13% of total employees and 17% of budget is spent on security.

Wallets

- Between 5.8 million and 11.5 million wallets are estimated to be currently ‘active’.
- The lines between wallets and exchanges are increasingly blurred: 52% of wallets surveyed provide an integrated currency exchange feature, of which 80% offer a national-to-cryptocurrency exchange service. In contrast with exchanges, the majority of wallets do not control access to user keys.

Payments

- While 79% of payment companies have existing relationships with banking institutions and payment networks, the difficulty of obtaining and maintaining these relationships is cited as this sector’s biggest challenge.

- On average, national-to-cryptocurrency payments constitute two-thirds of total payment company transaction volume, whereas national-to-national currency transfers and cryptocurrency-to-cryptocurrency payments account for 27% and 6%, respectively.

Mining

- 70% of large miners rate their influence on protocol development as high or very high, compared to 51% of small miners.
- The cryptocurrency mining map shows that publicly known mining facilities are geographically dispersed, but a significant concentration can be observed in certain Chinese provinces.

Methodology

This section of the paper outlines the costs of using commercial banks for all transactions within the Nigerian economy relative to the cost of hypothetically using Bitcoins for the same amount of transactions. The first section of the methodology calculates the total accounting costs of using commercial banks for all transactions, the section performs the same calculations for Bitcoins while the third sections compares the non-accounting costs of using the different mediums of transactions.

Accounting Costs

Commercial Bank Costs

To calculate the cost of using commercial banks for all transactions in Nigeria, the transactions performed by 7 Systemically Important Banks (SIBs) in Nigeria will be used to proxy the transactions through Nigerian commercial banks. The costs were sourced from the CBN guide to charges by banks and other financial institutions in Nigeria, while the total current account deposits and volumes of transactions were sourced from the annual reports of commercial banks and the NIBSS (Nigeria Inter-Bank Settlement System) e-payments fact sheet. Table 1 below provides a summary of the required data.

Table 1: List of some Fees and Charges

Fee/Rate/Charge	Amount/Percentage
Current Accounts	Negotiable
Current Account Maintenance Fee	Negotiable subject to a maximum of ₦l per mille

Stamp Duty Charge	₦50 per transaction
Counter Cheque	₦50 per leaf
SMS Charges	₦4 per message
Bills Payment (Including Bills Payment through other E-channels)	0.75% of transaction value but not more than ₦1,200
ATM Charge (withdrawal from other bank's ATM)	₦65 (after the 3rd withdrawal within the same month)
Electronic Funds Transfer: Below ₦10,000,000	₦50
Card Maintenance Fee	
Foreign Currency Denominated debit/credit cards	$20 p.a. (or its equivalent)
Naira debit/credit card	₦50 monthly
Management fee	Negotiable, subject to maximum of 1% of the principal amount disbursed (one off charge)
Commitment fee	Negotiable, subject to maximum of 1% of the principal undisbursed amount (one off charge)
Purchase of form A	₦100 per form
Form M processing	₦1000 (2016) ₦3000 in 2017 (in addition to maintenance fee)
Commission on withdrawals from Domiciliary Accounts (whether savings or current account)	0.05% of transaction value or $10, whichever is lower

Source: Author's Computation

Table 2 shows the values of transaction in 2015 and 2016.

Table 2: Value of Transactions

	2015	2016
Current Account Deposits in 7 SIBs	5,537,288,897,000	6,038,862,541,000
Total volume of transfers (NIP + NEFT + e-billsPay)	101.37 million	180.5million
Total volume of cheques processed	13.47 million	11.7 million
Total number of Active ATM cards	41.89 million	29.24 million

Source: Author's Computation

NIP; NIBSS Instant Payment

NEFT; NIBSS Electronic Fund Transfer
E-bills Pay; Electronic Bills Payment.

Calculation of Costs

a. **Current Account Charge**

$$Current\ Account\ Maintenance\ Fee = \frac{Total\ Amount\ in\ Current\ Account}{1{,}000}$$

For 2015:

$$\frac{5{,}537{,}288{,}897{,}000}{1{,}000} = ₦5{,}537{,}288{,}897$$

For 2016:

$$\frac{6{,}038{,}862{,}541{,}000}{1{,}000} = ₦6{,}038{,}862{,}541$$

b. **SMS Charge**

$$SMS\ Charge\ for\ all\ Transfers = Total\ Volume\ of\ Transfers \times ₦4$$

For 2015:

$$101.37\ million \times ₦4 = ₦405{,}480{,}000$$

For 2016:

$$180.5\ million \times ₦4 = ₦722{,}000{,}000$$

c. **Stamp Duty Charge**

$$Stamp\ Duty\ Charge\ for\ All\ Transfers = Total\ Volume\ of\ Transfers \times ₦50$$

For 2015:

$$101.37\ million \times ₦50 = ₦5{,}068{,}500{,}000$$

For 2016:

$$180.5\ million \times ₦50 = N9{,}025{,}000{,}000$$

d. **Cheque Fees**

$$Cheque\ Fees = Total\ Number\ of\ Cheques\ Processed \times Price\ Per\ Leaf\ (₦50)$$

For 2015:

$$13.47\ million \times ₦50 = ₦673{,}500{,}000$$

For 2016:

$$11.7\ million\ \times ₦50 = ₦585{,}000{,}000$$

e. **ATM Card Maintenance Fee**

$$ATM\ Card\ Maintenance\ Fee = Number\ of\ Cards\ \times ₦600\ (i.e.\ N50\ \times 12)$$

For 2015:

$$41.89\ million\ \times ₦600 = ₦25{,}134{,}000{,}000$$

For 2016:

$$29.24\ million\ \times ₦600 = ₦17{,}544{,}000{,}000$$

The sum of costs is presented in table 3.

Table 3: Sum of costs

Charges	2015 (₦)	2016 (₦)
Current Account Maintenance Fee	5,537,288,897	6,038,862,541
SMS Charge for all Transfers	405,480,000	722,000,000
Stamp Duty Charge for all Transfers	5,068,500,000	9,025,000,000
Cheque fees	673,500,000	585,000,000
ATM Card Maintenance Fee	25,134,000,000	17,544,000,000
Total	**36,818,768,897**	**33,914,862,541**

Source: Author's Computation

It should be noted that the sums are not inclusive of numerous other charges and fees due to data unavailability such as charges for; withdrawals from domiciliary accounts, purchase of form A, processing of form M, foreign currency card maintenance fee, electronic funds transfer charge, ATM charge (withdrawal from other banks), negotiable fee etcetera. The addition of these fees should substantially raise the cost of transactions through commercial banks in Nigeria.

Bitcoin Costs

Between 2015 and 2016 Bitcoin fees averaged between $0.30 and $1 per transaction. In line with accounting prudence, an average cost of $0.60 and $0.75 will be estimated for the years 2015 and 2016 respectively since transaction fees were relatively lower in 2015 (Voorhees, 2017).

Therefore,

$$Cost\ of\ Transaction = Total\ Volume\ of\ Transfers\ \times Fee$$

Note; \$0.60 = ₦135.6 and \$0.75 = ₦286.5 at 2015 and 2016 Bureaux de Change exchange rates respectively (₦226/\$1 and ₦382/\$1).

For 2015:

$$101.37\ million\ \times ₦135.6 = ₦13{,}745{,}772{,}000$$

For 2016:

$$180.5\ million\ \times ₦286.5 = ₦51{,}713{,}250{,}000$$

2016 (at Old Exchange Rate):

$$180.5\ million\ \times ₦169.5 = 30{,}594{,}750{,}000$$

Table 4: Comparison of Costs

Cost	2015 (₦)	2016 (₦)	Average Cost (₦)
Banks	36,818,768,897	33,914,862,541	35,366,815,719
Bitcoins	13,745,772,000	51,713,250,000	32,729,511,000
Difference	**23,072,996,897**	**-17,798,387,459**	**2,637,304,719**
Credit to Private Sector	**52.88 billion**	**61.05 billion**	

Source: Authors' Computation

When comparing the cost of both mediums of transaction; in 2015, using bitcoin appears to be cheaper while the current exchange rate in Nigeria has made using Bitcoins more expensive in 2016. But on average Bitcoin transactions appears cheaper.

Non-Accounting Costs

This section presents the comparison of implicit costs of both media for which figures are unavailable. The review of literature will be used to ascertain which medium has a higher cost.

Table 5: Non-Accounting Costs

Cost	Banks	Bitcoin
Currency volatility	Depends on exogenous factors	Very volatile
Time cost	Relatively lower	Subject to number of transactions
Insurance cost	Lower	Higher (no insurance on losses)

Theft of funds	Higher	Lower
Regulation/supervision	Higher regulatory cost	Lower cost
Use for conduct of monetary and fiscal and monetary policies	Possible	Currently impossible due to deregulation
Loan facilities	provides access to loans	No direct provision for loans
Account opening (documentation cost, minimum balance, ATM card)	Higher cost	Lower cost
Cost of Accessibility	Relatively more accessible due to presence of physical bank branches for individuals without access to e-platforms	Relatively accessible

Source: Authors' computation

Drawing a conclusion from table 4 above would be impractical due to unavailability of figures and values for appropriate comparison. The table however reveals that both mediums of transactions impose different levels of non-accounting costs.

Conclusion

The results indicate that the accounting cost of transacting with commercial banks reduced from ₦36.8 trillion in 2015 to ₦33.9 trillion in 2016 while the cost of transacting with Bitcoins would have increased from ₦13.7 trillion in 2015 to ₦51.7 trillion in 2016. The analysis reveals that transacting with Bitcoins would have been relatively cheaper in 2015 compared to commercial banks while Bitcoin transactions would have relatively more expensive in 2016. The results also indicate that the change in exchange rate resulted in significant increase in Bitcoin costs in 2016, otherwise Bitcoin costs would have been lower at the 2015 exchange rate. It should also be noted that the paucity of data has significantly reduced the cost of transacting with commercial banks, which has far reaching implications for the results of this analysis.

In relation to non-accounting costs, our findings indicate that both mediums of transaction exert varying amount of costs which cannot be quantified and as such a conclusion cannot be provided as to which medium imposes the highest implicit cost.

Taking cognisance of the exchange rate differences and unavailable data we conclude that the accounting cost of Bitcoin transactions are cheaper. Therefore the income saved from using Bitcoins can be ploughed back into the economy, thus providing the required platform to promote industrialization in Nigeria.

The addition of the implicit costs may however change the suggestion of our results.

We recommend further studies on the cost on the transactions through commercial banks in addition to studies which estimate values for the implicit cost of transacting with Bitcoins.

The Nigerian monetary authorities should carry out more research on cryptocurrencies with the aim of possibly regulating their use within Nigeria, integrating them into the Nigerian payment system and even developing a national cryptocurrency.

The Central Bank of Nigeria should further review downwards the cost of transacting with commercial banks.

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