IMPACT ASSESSMENT OF BLOCKCHAIN TECHNOLOGY ON THE GLOBAL MARKET

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ABSTRACT

Block chain was introduced to simplify transactions and take care of extant challenges, its incorporation into the global market industry was, therefore well expected. However, since coming into the industry, it has raised both benefits and challenges.

This paper, therefore delves into the concept of block chain technology, its basic principles and applications and an emphatic analysis of its impacts of global market transactions.

1.0 INTRODUCTION

The 21st century presents an extremely globalized world and, as a pre-requisite for economic growth and stability in such environment, maximizing technology is inevitable. Rather unfortunately, the sophisticated and dynamic nature of this technology makes it difficult to grasp given that there is always a new angle to everything.

Historically, the market space has been notably inimical to these technological advances despite their proven usefulness. Over the past 10-15 years, many start-ups and technology companies have attempted to develop products with mixed success – until the emergence of block chain technology for which international trade is identified as a primary use.[1] Block chain technology has, therefore become the "go-to" tool for international traders who intend to make consistent success.

Sequel to the foregoing, this paper analyzes block chain technology, with great emphasis on its impact on trade and the global market.

2.0 CONCEPT OF BLOCK CHAIN

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[1] Consensys 'Blockchain for Global Trade and Commerce' Available at https://consensys.io/blockchain-use-cases/global-trade-and-commerce Accessed 9th July, 2024.

Apparently, the concept of block chain is quite elusive to a vast number of individuals, students and professionals alike. This is not unprecedented given that, before now, block chain has been a notion peculiar to the technology space. It is, therefore imperative to establish a basic understanding of the concept. Wikipedia defines block chain as a decentralized, distributed, and often public digital ledger consisting of records called blocks that is used to record transactions across many computers so that any involved block cannot be altered retroactively, without the alteration of all subsequent blocks. Thus, once data is stored on the block chain, it cannot be altered and it is, in fact this specific feature of block chain technology that underscores its significance across various industries such as finance, cybersecurity, and healthcare.

 In essence, block chain enables secure transactions directly between parties over a peer-to-peer network without the need of intermediaries like banks or governments. Each transaction gets to be recorded in a block, which is encrypted for security and linked to the previous block, forming a chain. This chaining of blocks ensures a chronological order of transactions that cannot be modified without the consensus of the network. Also, each block in the chain contains a copy of all transactions, and every time a new transaction occurs on the Block chain; first, it is verified, and then a record of that transaction is added to everyone's ledger.

Beyond its foundational role in cryptocurrencies, block chain has diverse applications which includes aiding the prevention of bank and transaction frauds, addressing supply chain inefficiencies and securing sensitive data like medical records, among others. As a decentralized database, block chain also promotes transparency and trust in data exchange among interconnected computers, establishing itself as a reliable source of truth in the digital age.

2.1 BASIC PRINCIPLES OF BLOCK CHAIN TECHNOLOGY

2.1.1 DECENTRALIZATION

Block chain operates on a network of computers (nodes) where each node has a complete copy of the block chain ledger. This decentralized structure means there's no central authority controlling the entire system. Decentralization enhances security and reliability because there's no single point of failure.

2.1.2. TRANSPARENCY

Every transaction on the block chain is visible to all participants in real-time. This transparency ensures that everyone can see the transaction history and verify its accuracy. It promotes trust among users since any suspicious activity can be easily detected and investigated by the community.

2.1.3. IMMUTABILITY

Once data is recorded on the block chain, it's extremely difficult to alter or delete. Each block in the chain contains a cryptographic hash of the previous block, creating a chronological and immutable record of transactions. This feature ensures the integrity and trustworthiness of the data stored on the block chain.

2.1.4. SECURITY

Block chain uses advanced cryptographic techniques to secure transactions and protect user identities. Each transaction is digitally signed and verified by the network, making it virtually impossible for unauthorized parties to alter the data. This robust security framework safeguards sensitive information and prevents fraud.

2.1.5. CONSENSUS MECHANISM

Before a transaction is added to the block chain, it must be validated by the network through a consensus mechanism. Different block chain networks use various consensus algorithms (like Proof of Work or Proof of Stake) to achieve agreement among nodes about the validity of transactions. Consensus mechanisms ensure that all participants in the network agree on the order and integrity of transactions without relying on a central authority.

2.1.6. SMART CONTRACTS

These are self-executing contracts with predefined rules and conditions written into code. Smart contracts automatically execute actions when specific conditions are met, eliminating the need for intermediaries. They enable secure and transparent execution of agreements, such as payments or asset transfers, reducing costs and minimizing the risk of fraud.

2.2. APPLICATION OF BLOCK CHAIN

As has been reiterated, block chain ensures that everyone in a network has a copy of the data, making it extremely hard to change without agreement. This makes block chain secure and transparent, which is why it's widely used in finance, supply chain management, and healthcare. Companies now block chain widely to make their operations more secure and transparent. Briefly, the areas of application of block chain technology as it concerns the trade industry will be discussed.

2.2.1 ONLINE IDENTITY VERIFICATION

Block chain simplifies online identity verification in banking and finance. Users verify their identity once on the block chain and can then share it securely with various service providers. They can choose how they verify their identity, like using passwords or facial recognition. This streamlines transactions and ensures security across the industry.

2.2.2 CRYPTOCURRENCY

Originally created for cryptocurrencies such as bitcoin, block chain is a secure and transparent way to record transactions. It ensures accuracy and privacy through cryptography, allowing anonymous transactions while keeping details visible. The decentralized and static structure of block chain make it a trusted technology in many industries, improving security and enabling new innovations.

2.2.3 ASSET MANAGEMENT

Block chain is widely used in asset management, where it simplifies the handling and exchange of assets like real estate, stocks, and bonds. Traditionally, trading these assets involves high costs and intermediaries like brokers and settlement managers. Block chain removes the need for these intermediaries, providing a transparent and error-free process for managing assets globally. This makes asset management more efficient and secure.

2.2.4 INTERNET OF THINGS

In the Internet of Things (IoT), devices connect and share data to operate together seamlessly. Block chain plays a crucial role by ensuring the security and reliability of this interconnected system. It protects the data exchanged between devices, ensuring that it remains secure and accessible only to authorized users. This helps strengthen overall security in IoT applications, safeguarding against potential vulnerabilities in the network.

3.0 BLOCK CHAIN IMPLICATIONS ON GLOBAL MARKET

Global statistics report that approximately 30% of trade financing benefits is claimed by banks and other financial institutions[2] and inasmuch as this does not appear perturbing, with the operational inefficiencies and costs such as delays, fraud and loss of income, it will most likely be in the nearest future. It is, therefore important to access the existence of block chain and determine whether or not it impacts of this and other aspects of the global market.

3.1 DISRUPTION OF TRADITIONAL BANKING SYSTEMS

Apparently, the banking system plays a pivotal role in trade financing which is, in turn the bourne of the global market. Hence, it is pertinent to look into these impacts.

3.1.1 DECENTRALIZATION OF FINANCIAL SERVICES

The integration of block chain technology into financial services is revolutionizing the way transactions are conducted. By shifting away from centralized institutions and towards peer-to-peer networks, block chain technology increases security, transparency, and efficiency.

3.1.2. ENHANCED SECURITY AND REDUCED FRAUD

Block chain technology offers enhanced security measures that significantly reduce fraud within financial transactions. By leveraging cryptographic algorithms and decentralized verification processes, sensitive data is encrypted, ensuring that only authorized parties can access and verify the information. This minimizes the risk of fraudulent activities and increases transparency and trust within the financial ecosystem.

3.1.3. IMPROVED TRANSPARENCY AND TRUST

The utilization of block chain technology promotes improved transparency and trust in financial dealings by creating immutable, transparent transaction records accessible to all network participants. By leveraging decentralized networks, block chain ensures that every transaction is securely recorded and can be viewed by all parties involved, eliminating the need for intermediaries and potential discrepancies.

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[2] Ibid [1]

Furthermore, block chain technology drives cost reduction and efficiency in financial operations by streamlining processes, reducing intermediaries, and enabling real-time transactions across borders. By leveraging decentralized ledgers and smart contracts, block chain technology offers a transparent and tamper-proof system that eliminates the need for manual verification, leading to faster transaction settlements and reduced errors.

3.2 RISE OF CRYPTOCURRENCIES AND DIGITAL ASSETS

Cryptocurrency is an essential characteristic of block chain technology and this too has, in no minute way impacted the global market space, thus:

3.2.1 EASY ACCESS TO AND DECENTRALIZATION OF FINANCIAL SERVICES

The rise of cryptocurrency has made it easier for people to access financial services, regardless of their economic or geographical situation. With cryptocurrency, all you need is a smartphone or internet connection to participate. As a direct consequence of this, the global finance system has become decentralized. In fact, cryptocurrency has disrupted the traditional banking system by introducing decentralized finance (DeFi). This means that transactions are recorded on a public ledger called a block chain, rather than being controlled by a central authority.

3.2.2 SPEED AND EFFICIENCY

Cryptocurrency transactions are much faster and cheaper than traditional bank transfers. This is because cryptocurrency uses block chain technology, which allows for peer-to-peer transactions without the need for intermediaries.

3.2.3 SYSTEMS FOR CLEARANCE AND SETTLEMENT

The traditional financial system is slow and inefficient, with transactions taking days to settle. Cryptocurrency, on the other hand, offers a much faster and more secure way to manage assets, with transactions settling in real-time.

3.3 IMPACT ON SUPPLY CHAIN MANAGEMENT

Block chain's unique features of digitizing, securing and streamlining processes of operation can be of huge impact to supply chain management. Also, by creating a secure and transparent network

that allows for real-time tracking of goods at every stage of the supply chain[3], block chain technology helps address certain issues bugging supply chain management such as maintaining visibility across networks and transparency. Furthermore, implementing block chain technology can help reduce costs across the entire supply chain by eliminating intermediaries and reducing administrative overheads.[4] That way, data is shared securely across the lifecycle of the product while still minimizing costs. Speed is also promoted as a result of block chain's ability to automate payments, streamline logistics processes and track inventory levels.

However, certain issues have arisen from the use of block chain technology to promote supply chain management. These challenges include; cybersecurity and data privacy concerns, legal uncertainty, integration with existing systems, among others. It is, therefore important to monitor the performance of this technology closely as well as encourage users to follow security best practices and identify key use cases.

3.4 IMPACT ON TRADE AND POST TRADE PROCESSING

Block chain has the potential to bring major benefits to the reconciliation process by improving record-keeping as a result of node operations.[5] It, therefore reduces time-consuming and costly reconciliations and makes the chain a potential golden source of truth of all members.[6]

Also, block chain revolutionizes the system through the essential feature of enabling effective operation of central counterparties. Most importantly, by tokenizing assets with cryptographically-secured contracts, block chain can automate trade processes and has the potential to make settlement instantaneous, eliminating the need to perform post collateral transactions.[7]

Block chain also impacts other aspects of the global market such as bulk commodities logistics, trade finance, marketplaces, track and trace.

4.0 FUTURE TRENDS AND OPPORTUNITIES

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[3] Josef Gunther, 'The Role of Blockchain in Supply Chain Management (SCM)' [March 16, 2023], available at https://www.paltron.com/insights-en/the-role-of-blockchain-in-supply-chain-management-scm# Accessed 9th Juky, 2024.

[4] Ibid [3]

[5] Polymath, 'Block chain and Post-Trade Processes: How it Helps, Why it's hindered, and What's next?' Available at https://info.polymath.network/blog/blockchain-and-post-trade-processes Accessed 9th July, 2024.

[6] Ibid [5]

[7] Ibid [5]

Asides the fact that businesses will begin to recognize the benefits of block chain technology and the adoption rate will skyrocket, it is important to look at other future possibilities and ensure adequate preparation for them.

At first, an improved sustainability rate is envisaged. Currently, the European Union contemplates a uniform network that will lead to the end of greenwashing and promote the economy of the social market. Block chain only makes this easier through its ability to track and verify sustainable practices within the industry.

Also, new business models are likely to emerge and there will, more likely be an increased integration with IoT.

Generally, the entire system is vulnerable to huge digitization and in the nearest future, the global market will be wholly immersed in technology.

5.0 CONCLUSION

The global market has been shaken, albeit positively by block chain and all it embodies. And while this system has posited quite a number of challenges, the benefits that come with it have been enormous. Conventional wisdom, therefore suggests that this technology be harnessed and best practices be engaged to maximize this technological milestone.