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Application of Blockchain Technology in Banking Security and Authorization-related Solutions

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ABSTRACT

It is nearly ten years since blockchain moved from a great technology with narrow focus with only digital currencies, to one which includes applications in many different domains. There are many evidences that help demonstrate that block chain has been a solution to many problems associated with security and authorization especially in banking sectors. Blockchain is no doubt the future thing.

KEYWORDS

Block chain; Bitcoin; Cryptocurrencies.

1. Introduction

Blockchain, the idea behind Bitcoin is an emerging technology that has rapidly gained popularity in Africa. The technology offers more advantages as compared to databases because of its security and the ability to offer trustless recording of transactions without relying on any intermediaries. Blockchain provides its participants with a very secured system across a network [1]. The blockchain is a chain of blocks that aims to solve the problems of centralization and hence it is said that Blockchains are decentralized digital ledgers which utilize cryptographic algorithms to verify the creation and transfer of digitally represented information over a peer-to-peer network [2]. At the back of Block, chains exist a set of a decentralized consensus set of rules(protocols) and cryptographic algorithms among other security control mechanisms. Blockchain contains information about all the exchanges or transactions among its users since creation without the need for any intermediary. All the users have the opportunity to check the validity of the chain. Blockchains have a distributed consensus which means that there is no central point of control or failure, it also maintains the ability to be audited which means that every ledger entry is verifiable and retraceable across its full history and it has party identity abstraction which means that all the individual parties can transact with one another across a network without actually revealing their real identities [3].

2. Application of Block Chain Technology in Africa

The presence of different currencies with a centralized database was a great barrier to the exchange of goods and services between countries with different currencies. The introduction of, therefore, has provided a solution to that problem through the introduction of cryptocurrencies such as Bitcoin. There is no need for

third parties, Africa utilizes an encrypted, secure distributed database. Applications can be seen in banks in South Africa; BSA, Frist National Rand, Investec, Nedbank, Standard Bank, and the South African Reserve Bank. The private banks have adopted a private blockchain while the rest have adopted public blockchain. Distributed databases have enhanced the speed of exchange of assets and at a lower cost [4]. Kenya has not been left behind either, the introduction of BitPesa, a money remittance platform that converts digital currency such as Bitcoin to the local African currency without the involvement of third parties.

Over the years, Africa has been faced with unreliable national property and land register which is a major obstacle to her development. A solution has been seen with the introduction of great technologies like Revolutionize and Ethereum that have created virtual land and property registers that are protected by strong encryption technologies hence making all land details available to the public and fully secure. The same initiative in Rwanda is called Bitland. The aim is to give African land titles the credibility they so lacked previously.

In the transport sector in Kenya, the National Transport Safety Authority(NTSA) has the latest service on a shared BT which is aimed at linking many state agencies and its major work is to alert security about vehicle's insurance and other important details like ownership. This will eventually lead the country to a point where all vehicles will have an electronic sticker pasted on the windscreens detectable via use of special gadgets thereby helping root out jalopies from Kenyan roads and recovery of stolen vehicles.

In the education sector, Nigeria has utilized the Blockchain technology as its government agencies have collaborated with Cryptography Development Initiative of Nigeria (CDIN) in the education sector. This has seen the Education sector grow in the integrity of exams and other functionalities including the financial sector.

As far as health is concerned, in Kenya the health sector has put in place a smart platform that employs the Blockchain technology, nearly all public hospitals share a common hub where data like the use of public resources and hospital management can be monitored. the action is being achieved through the development of a cloud-based database.

3. Benefits of Block Chain Technology in Africa

Easy Access to the markets: With the introduction of distributed databases, barriers like intermediary banks have been removed hence the transactions can be made within the shortest time possible and also at reduced costs. The parties are able to communicate directly without any intermediary making the chain lighter.

The business environment has greatly improved: Africa's economic growth greatly depends on small-scale and medium enterprises that need a lot of financial support for their growth, block chains, therefore, has the ability to facilitate better credit to small businesses through smart contacts. Large businesses also benefit from such finances hence upgrading the economic stabilities of the countries [5].

Blockchain Facilitates cross-border transactions: The variations in currencies had made African countries realize the difficulty in its attempt to transact with each other. The introduction of blockchain technology has enabled the use of currencies without any problem through the concept of cryptocurrencies. This has made the countries trade with ease whilst increasing speed and reliability.

Low costs of money remittance: Under normal circumstances, when people wish to borrow from each other, they go through intermediaries like banks. The process could be long and costly at times and with high-interest charges as well. With the introduction of the blockchain, the use of third parties has been removed hence faster transaction processing. Security has been tightened because of the use of cryptocurrencies such as bitcoin.

Privacy: Data decentralization in the distributed databases is very secure as it comes with the concept of cryptography. Blockchain helps in enhancing online privacies by allowing users to store their own digital footprints on their individual unique blockchain and control who can actually access them.

Creation of jobs: The development of bitcoin as a common currency in Africa has opened many doors for job creation in many companies and industries whether private or public leading to rapid investments.

4. Challenges of Implementation of Block Chain Solutions in Africa

Technological incompetence: Africa to date is still facing major technological challenges that are slowly being addressed with time with major challenges including transaction speed, lack of enough data protection and network security problems.

Poor infrastructure: Another key challenge is the aspect of infrastructural facilities like the availability of the internet to the common man. In Africa, not all common households have electricity and so the ability to access the world wide web is still a dream in Africa. Since block chains run on the internet, then those who cannot get access to a network basically cannot use that technology.

Government policies and regulations: African governments have not fully moved to the newest technologies and therefore the public still utilizes the traditional methods of transaction. Blockchain cannot use such methods. The restructuring of policies is still slow in Africa resulting in slow changes from traditional to new technologies.

Confidentiality and security: Africa fears the fact that blockchain allows competitors to view certain details of each other's transactions. The expectation is that blockchain should be able to hide certain confidential information while at the same time, it should allow distributed ledger consensus.

Fear of Crimes: with the introduction of cryptocurrencies, money laundering has been a great fear, there is also the aspect of tax evasion which is likely to happen with the introduction of the blockchain. Developers, therefore, are asked to be more vigilant on such issues as the development of proper privacy tools. Until then, Africa fears to venture more into blockchain technologies.

Skills: There are inadequate skills in Africa in two sections; the first is the software developers. African continent does not have many people in the development part which leads to the shortage of such software in the market. The other shortage is that of the skills in the usage of the system. Many people need a lot of training to be able to utilize the concept of blockchain technology and due to limited finances, that have not been realized in most parts especially the rural parts of Africa.

5. Conclusion

It is nearly ten years since blockchain moved from a great technology with narrow focus with only digital currencies, to one which includes applications in many different domains. There are many evidence that help demonstrate that block chain has been a solution to many problems associated with security and authorization especially in banking sectors. Blockchain is no doubt the future thing.

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