Implementation of Blockchain Based Data Storage and Verification for Access

Vyshnavi Ankam[1], N. Mahesh Reddy[2], Mohammed Mutahar Mujahid[3]

[1,2,3] Student, Department of Electronics and Communication Engineering, Chaitanya Bharathi Institute of Technology, India.

Abstract

Verification for access is used in software to secure information of the user. There are some kinds of verification process, however, as per the secondary information; major users prefer the biometric verification process. On the other hand, block chain based data storage is used in businesses, banking sectors, and other sectors. In this case, this process helps to store confidential information with proper security. This research is focused on the implementation process of block chain based data storage and verification access control. The aim of this research is to demonstrate the importance of block chain data storage and verification access control in various sectors to store and secure information of the users. This research has used the quantitative research data collection method to collect information on block chain and verification access.

As per the information, it can be stated that the user has increased demand for block chain due to its verification ability, and it's other benefits such as increased speed of work, traceability, track of confidential data, and others. In this research, the implementation process of block chain has been discussed with an algorithm flowchart. As per the flowchart, there is a node that helps to store the information of the user and increase the value of block chain data storage. As per the result of this research, there are few steps to implement data storage and those are increasing knowledge on block chain and verification, and strategizing block chain, and plan to implement that. After that, the simulation process needs to be entered in this process to check the progress of implementation. In this research work, the FMS model is discussed to focus on the implementation of verification for access.

Keywords

Blockchain, CSE, data storage, technology, verification access control.

INTRODUCTION

Blockchain based data storage is the process that helps to store and secure information. In this process, the information which is in digital format can be saved. Blockchain has an important role in crypto currency systems and others. This technology helps different sectors to secure their confidential information in block chain based data storage. In addition to that, **verification for access** is used to verify users access the information and this process helps to confirm that the data is secure. The aim of this research is *to elaborate the impact of block chain based data storage and verification for access in different sectors to save and secure confidential credentials*.

ROLE OF BLOCK CHAIN BASED DATA STORAGE

The main role of **block chain based data storage** is saving information in the node of the computer network. This process is beneficial for users because it helps to secure information of users such as banking transactions, record of other information of businesses, banks, and other kinds of crucial credentials [1]. In businesses, it helps to secure information of employees, company finance, suppliers, and other stakeholders. On the other hand, in banking sectors, the information of banking transactions, bank users, account details, and other kinds of crucial information are stored and secured. Needless to say, block chain helps to increase trust of users on database management, and in CSE. Along with that, this process of the CSE department helps to increase transparency of data which is shared across a business network.

In addition to that, block chain helps to increase traceability of the data shared in the database system and it delivers cost savings with new efficiencies. The block chain based data storage helps different sectors through increasing cost savings speed, along with, it reduces overhead costs, reducing paperwork errors, and transaction cost [2]. Needless to say, it helps to increase efficiency of a business and increase automation in the business process. Apart from that, it eliminates middlemen for the verification process.

IMPORTANCE OF VERIFICATION FOR ACCESS

Verification for access is the crucial process in the block chain process that helps to verify users to access the saved information. This process helps to confirm the user that the information is secured in that technical process. Verifying the user block chain helps to increase trust of users in block chain and it also helps to make the information confidential [3]. This verification process eliminates fraud and ensures that no one can access that specific information without that user. In the verification process, the users need to provide their ID proof to access the specific information such as banking transaction, audit, and others. It helps to prevent third parties from using the information of the user to use the crucial data to make trades.
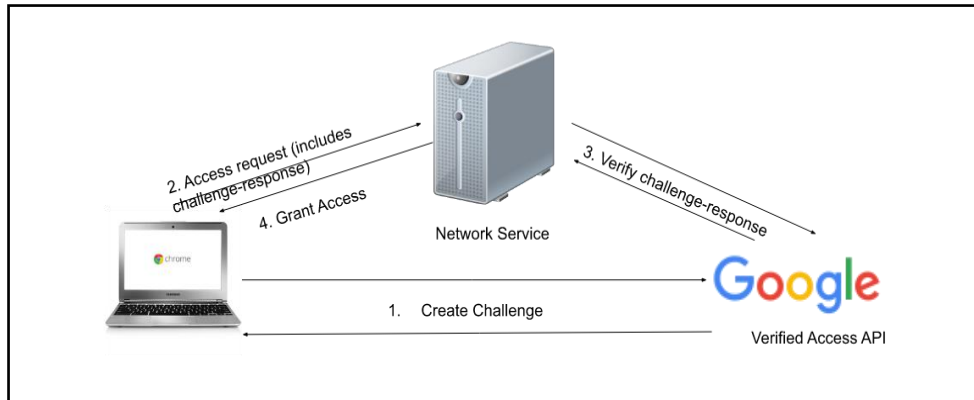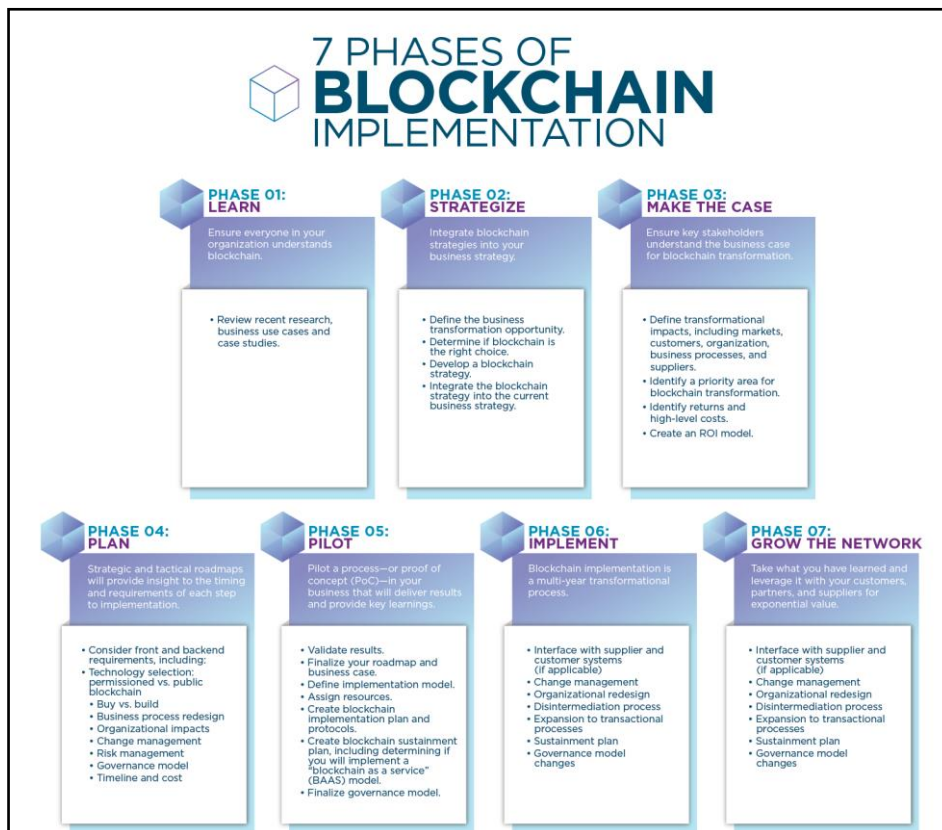
Figure 1: Verification of Access
(Source: [3])

There are some advantages of verification of access in CSE such as it helps to avoid manipulation of accounts of block chain users. Apart from that, it protects users' accounts against improper use of users' information. Verification and validation of CSE ensures valuation of assets and proper recording of users credentials [4]. In addition to that, the verification process helps to reduce the possibilities of product failure and defects in the business procedures.

IMPLEMENTATION OF BLOCKCHAIN BASED DATA STORAGE AND VERIFICATION FOR ACCESS

Blockchain implementation is the substitution of block chain solutions into software systems of users. There are some stages to implement block chain based data storage in a hardware and software system. In the implementation process, the first phase is to learn about block chain such as the role of block chain, process to use block chain, and other knowledge related to block chain based data storage [5]. Therefore, the second step of implementing block chain is developing a strategy of block chain and integrating the block chain strategy into the strategy of business. Moreover, the user of block chain needs to create an ROI model and other costing information to implement it in the business process.

Figure 2: Blockchain Implementation Phases
(Source: [5])

After that, the user needs to focus on the business development procedures through risk management, change management, cost management, and then needs to make a plan to implement block chain. Then the user needs to pilot the block chain process in the company to reassure that the planning is successful and after that the implementation process can be started. In this process, verification for access processes needs to include with block chain to develop the security in the business [6]. Verification access control systems need to apply in the business process to increase the ability of use of block chain in the business process. Through the *FSM model* of computation, the efficiency of verification of access can be checked. It is the mathematical process that helps to implement a simulation process. Needless to say, this model can help to simulate the efficiency of verification access in block chain to improve the security process.

MATERIALS AND METHODOLOGY

5.1 Research Philosophy

Positivism research philosophy is used in this research process to collect authentic information. Positivism is defined as a process that can help to collect factual knowledge of a research topic through observation [7]. This research is related to the block chain implementation in any sector to save information of that sector. The users want safe and secure technology to store information and block chain can meet the demand of the user. Through using positivism philosophy, the research information can get easily through an observation process and it helps to provide real data to readers.

5.2 Research Design

Descriptive research design is used in this research of implementation of block chain based data storage and verification for access. Descriptive research design is the process of a research method that helps to demonstrate the information of a research topic with a proper example [8]. In this research, the description of verification of access and block chain has been given. Verification process in the technological field is required to secure the information of the user. For example, in the banking department, if a user is not verified, then after a while the user has a high chance to get fraud from any third party.

5.3 Research Strategy

Quantitative research strategy is used in this research to complete the research work with proper quantitative information. Quantitative research is the research strategy that collects numeric information of a research. In this research, the importance of block chain and verification access control is discussed properly through focusing the users of block chain. In addition to that, the percentage of usage of verification access control is given with graphs and tables. There are approximately 80.24M people using block chain globally in 2021 [9]. Needless to say, there are many benefits of using block chain that allows people to gather and store their information securely.

5.4 Data Collection Method

Secondary quantitative data collection method is used in this research to provide the information of block chain and verification access. The information of secondary quantitative studies has been collected from the journals, newspaper, and academic pdfs. The journals of this research are collected from Google Scholar to provide authentic information related to the topic. As per the collected information, the block chain based data storage is used in every sector to check property confinement checking, rule coverage information storing [10]. On the other hand, verification of access is used by the users to check models to implement block chain in the business.

DATA ANALYSIS METHOD

As per the collected information of block chain management and implementation in the business and other sectors, it helps to collect confidential information of banking transactions, audit, and profit and loss. In addition to that, as per the business perspective, the block chain implementation helps in the collection of business employee's personal and professional information, salary and wages data, and others. From 2017, the user rate of block chain is increasing and the block chain has a demand in the marketplace because of its security and verification policy [11]. Verification access control helps the users to get more satisfaction to store information properly and they feel safe because the block chain cannot be accessed by third parties.

There are many kinds of verification processes that help to verify that the user is opening the document which is already stored in the block chain based data storage. Through using pin, personal security questions, traditional pass code, biometric authentication and others, the block chain technology can be secured to safe and secure information [12].

Table 1: Global Number of Blockchain User

Year	Number of Users
2017	21.51M
2018	31.91M
2019	44.51M
2020	63.48M
2021	80.24M

(Source: Self-developed)
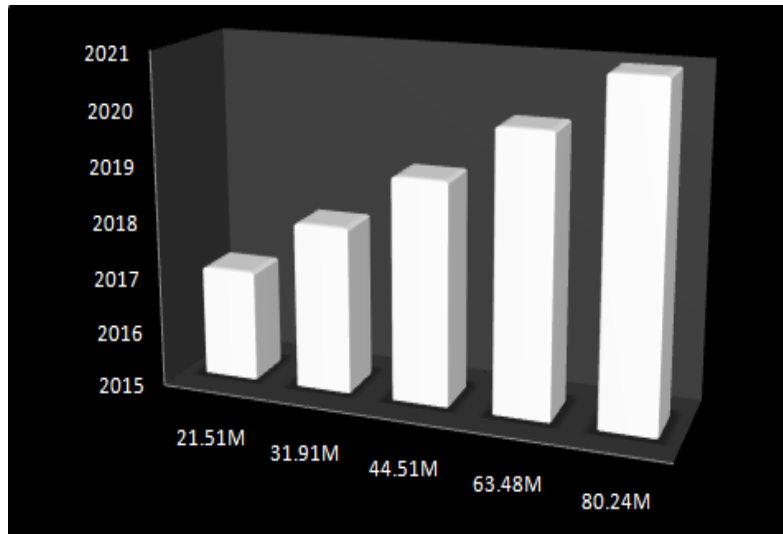
Figure 3: Global Number of Blockchain User
(Source: Self-developed)

As per the above graph, from 2017 to 2021, the user rate of block chain is increasing. In 2016, the rate of users was 21.51M of block chain based data storage [9]. Needless to say, the demand of block chain increased in these years for its beneficial processes. In 2021, 80.24M people users joined the block chain based data storage [9]. In this case, the users also have preference on the verification process because there are some kinds of verification process that can secure information differently. For example, a pin can easily be hacked, however, SMS based authentication cannot be hacked easily. On the other hand, biometrics is a more secure authentication process than other verification processes.

Table 2: Preferred Authentication Process

User Percentage	Verification process
Pin	30%
Traditional Passwords	38%
SMS based authentication	64%
Phone call verification	57%
Biometric authentication	74%
Personal security Question	33%

(Source: Self-developed)
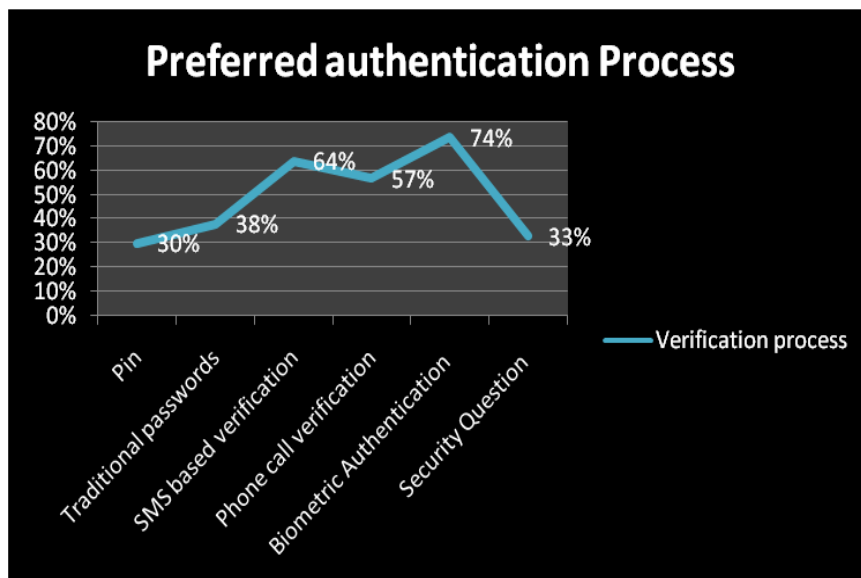
Figure 4: Preferred verification process
(Source: Self-developed)

As per the above graph and table, it can be stated that the users of block chain prefer biometric verification processes to secure their information. 74% of users like biometric processes to verify themselves to open confidential information from block chain [13]. On the other hand, the users do not prefer the pin and security question as verification access control.

RESULT AND DISCUSSION

7.1 Result

Implementation of block chain based data storage and verification of access is used mostly in the business operations, banking operations, and crypto currency. As per the above analysis, it can be stated that block chain technology stores confidential information with a proper security and that is why the users have trust on this process [14]. Through using different kinds of pass codes, biometrics, login process, and id checking process, the block chain can be accessed by the user to access the data.
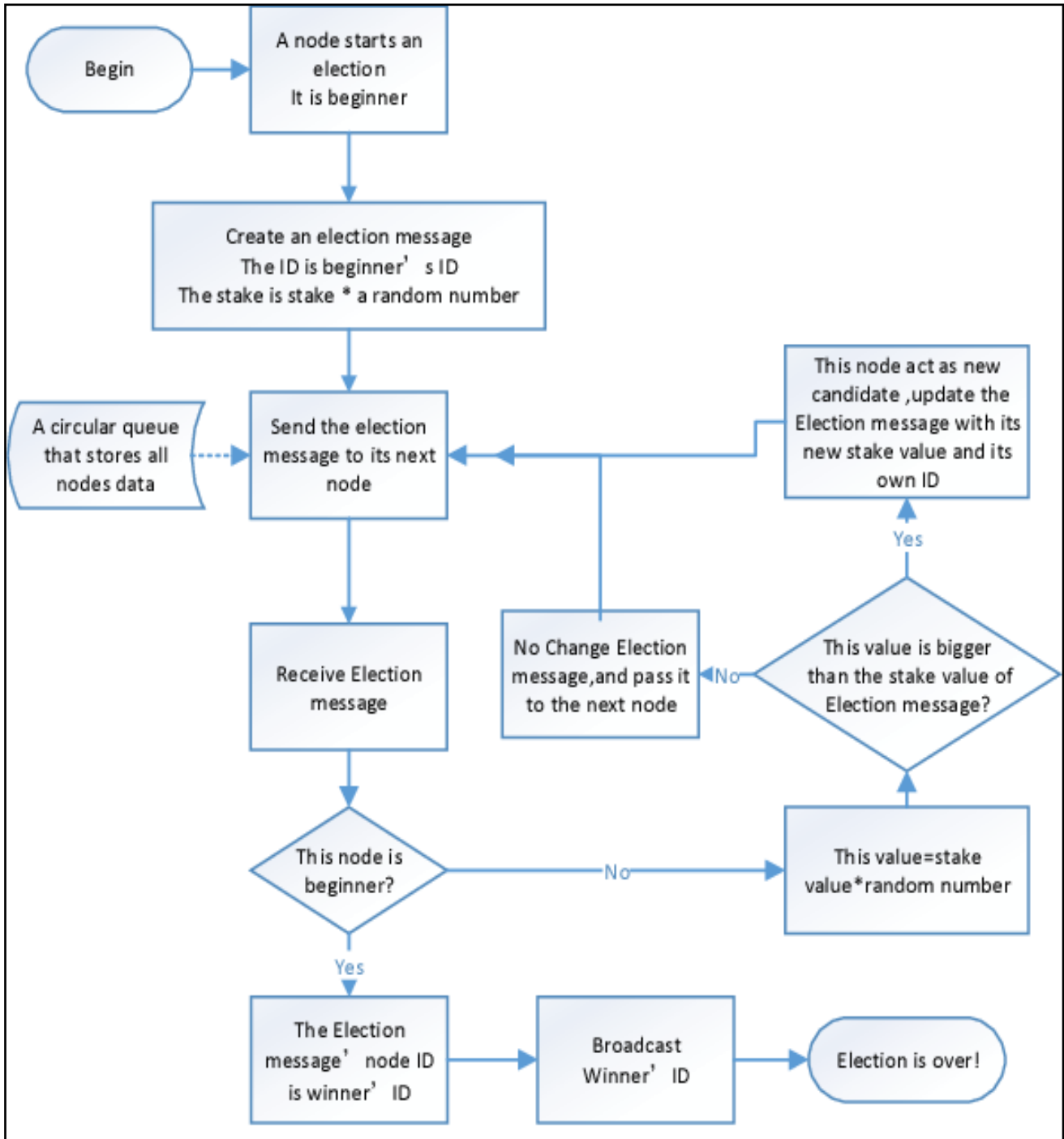
Figure 5: Algorithm Flowchart of Blockchain Implementation
(Source: [15])

As per the above algorithm flowchart, in the block chain implementation process, the user needs to create an Id in the block chain based data storage. Therefore, the information of the user can be sent in the block chain data storage process [15]. After sending data in this process, the data is sent to the nodes from the queue of information. The node of the block chain updates the information of the user and saves the document securely.

Figure 6: Algorithm Flowchart of verification of access
(Source: [16])

The above algorithm flowchart is related to the verification process usability and checking process of the security by simulating an attacker trying to open the block chain account of a user. Through verifying the signature of the user, the user needs to open the block chain process, therefore the user needs to accept the access process [16]. In this case, the attacker cannot open the file from the block chain because the verification process is strong and the implementation of the block chain can be effective in the business process to secure important information. As a result of the verification process, connecting block chain with the asset of the user is more secure. In this case, the user can access the information when the attacker tries to open the data from the block chain.

7.2 Discussion

As per the above research analysis and result, it can be stated that the block chain process is more effective to store information. In addition to that, it is valuable in the business process and banking sector. The users trust on block chain based data storage due to its verification and security process. Blockchain has a great verification process that helps to secure confidential data of a company or user [17]. It is discussed in this research that the users get benefits from the block chain through creating an account on the block chain database and the users can implement this in software to use this.

There are some kinds of verification processes that help to secure information of the users of block chain. In this case, as per the result of the research, the users prefer SMS based authentication process and biometric authentication that pin or traditional pass codes. In this case, the verification process is too strong that cannot be easily accessed by any attacker and the attacker will fail in the fraud process. FMS model verification helps to simulate the verification implementation process in the organization to check the effectiveness [18]. Implementing block chain in the business procedures or any other sectors get the benefit of increasing efficiency, speed, and traceability.

CONCLUSION

The above research has focused on the block chain based data storage and verification process. As per this research information, the block chain stores information of the user in the account. In this case, a user needs to create an account in the software to implement the block chain and then can upload the information in this process. In CSE, the block chain based data storage has been introduced to secure the crucial information of users appropriately in digital format. It can be used in banking, healthcare, software and real estate. In this case, the main attraction in block chain is verification of access. The above research specifies different kinds of

verification processes and it helps to increase trust of users in the block chain process. This process helps users to manage and balance between security and usability through the use of single sign-on, risk-based access, identity federation, integrated access management control, and mobile multi-factor authentication.

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