Research Paper

Blockchain-Enabled Banking System for Developing Countries

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ABSTRACT
This research, Block chain enabled banking system for developing countries focuses onintegrating the blockchain technology into banking in a bid to improve its security and also to study the existing banking systems using the technology in order to design an improved system using OOAD (object oriented analysis and design); and develop a new system that is secure, reliable based on consolidating two strategies, the SHA-256 and the RSA cryptography. Most commonly, the application of blockchain is in the area of capital markets, trade finance, identity management and payments. Banks are continuously exploring new ways to do transactions quicker for enhanced customer services by assuring transparency to customers and regulators while ensuring cost efficiency. Blockchain is an essential technology with promising application that can transform banking industry and make process more democratic, transparent secure and efficient. The banking system in Nigeria ranging from the tradition banking system, to electronic banking system, is affected by a lot of problems like inefficiency, lack of transparency, high cost and in-security (cyber-crime). The research is analyzed and designed using object oriented analysis and design (OOAD) and Evolutionary Model was used as software development methodology. In this study a new blockchain system has been designed, modeled and implemented. From the result of this study the new e-banking blockchain system is secure and immutable to threats of attacks and malicious tendencies by incorporating a consolidation of SHA-256 with RSA cryptography to validate previous hashed transactions. The developmental tools and technology used includes PHP/MySQL due to their high level security and robustness also HTML 5 and CSS 5 where used to design the front end. The system was tested using Xammp Server and was found to meet all specifications.
KEY WORDS: *Blockchain, cryptography, e-banking, immutable, traits*

I. INTRODUCTION

Conveyed record advancements (DLL) by and large known as blockchains or blockchain innovation, is an innovation with a promising result, which can be utilized to further develop areas, for example, monetary industry and frameworks like the financial framework. Many investigations and overviews have shown that the monetary business is the area managing blockchain innovation the most seriously[1][2][3][4]. There are different fields of utilization for blockchain in the monetary business, where it couldn't just supplant yet in addition supplement conventional cycles and increment their productivity. The scope of potential applications is developing quickly [5]. Most usually, the use of blockchain is in the space of capital business sectors, exchange finance, personality the board and installments.

The financial area is a significant area that utilizes innovation seriously, consequently there is need and opportunity to get better on the current framework. Banks are ceaselessly investigating better approaches to do exchanges speedier for upgraded client administrations by guaranteeing straightforwardness to clients and controllers while guaranteeing cost proficiency. Blockchain is a fundamental innovation with promising application that can change banking industry and make measure more fair, straightforward secure and effective.

Blockchain in particular is a kind of data set which different from a common, normal dataset in such a way that it stores data, blockchain are store houses of data, they store information into block which are subsequently knitted together. Very new information that is sent enters into a new square. A square loaded with information is anchored to a previous block, making the information fastened sequentially in order of request. A blockchain can accommodated varying data sort however the one mostly in using it the transaction record.

This exploration work will show the effect and significances of incorporating blockchain innovation into the financial framework. It will likewise show the improvement that blockchain will do to the financial framework in wording security, effectiveness, straightforwardness and so on these exploration work will examine seriously on blockchain and banking framework, show the huge of incorporating blockchain in the financial framework, the plan of design and framework model, conceivable execution, end, suggestion and limit of the examination.

II.   RELATED WORK

The Blockchain is a new and cutting edge innovation that is as yet in its beginning phases. Be that as it may, at this point, a basic measure of work has been cleared out of this field.

The creators of [6] talk about the possible results of using the blockchain in finance and dealing with the financial area. The goal was to find the expected worth of the blockchain in the asset and in dealing with the record fragment. The creator examined how the blockchain requests about the past. Bitcoin is shutting these hole and a couple of the difficulties that remain.

In this [7] article, the author analyzes the usage of Blockchain advancement without tokens to guarantee information about monetary trade nuances. The article takes apart the confirmation parts of appropriated informational collections, and proposes a response to the issue of keeping the uniqueness of the information in them reliant upon blockchain advancement without tokens. Eventually, the creator gives proposition for the introduction of Blockchain development into current monetary structures. As indicated by the creators, a blockchain without mining or tokens will essentially work on the pattern of help for the honesty and uniqueness of information on bank trades.

The creators of this [8] paper looks at the challenges and odds of executing blockchain development across banking. Blockchain development can smooth out the overall monetary structure, achieving practical developments, using more productive systems than at this point. The creators propose that using blockchain advancement in monetary cycles can be dealt with by vanquishing the current deterrents of the blockchain, which are found in "bitcoin". These weights are the high energy utilization and the significant expense of the gear.

In this assessment [9], the creators propose the essential progression model for separating and following the method of improvement. The model can be associated with any sort of industry to fathom the pattern of progression, improvement, and the strategies to win a slice of the pie in the monetary business. The examination discoveries uncover the conditions under which most banks contend to create their own Blockchain banking structures. The examinations, taking into account the essential headway model, similarly show the low major part of Blockchain banking at this point.

This paper [10] discusses the potential gains of blockchain advancement for business banks from the going with perspectives: charging movement, cross-line portion action, and the asset securitization business of business banks.

Blockchain advancement can possibly lessen trade costs for the two players while likewise expanding the functioning capability of business banks' and leaders' exercises.

The creators of this paper [11] investigate blockchain advancement as an imaginative improvement in the monetary organization industry. In an evaluation reliant upon [12] money related organization providers, the creators tracked down that monetary organization affiliations will overall view blockchain headway as a lower need due to the shortfall of a technique for huge worth. They assume that as adventures face new development and improvement, for instance, blockchain, they should ponder capable ways to deal with examining and to choose if they can benefit from the headway to be used or not.

The essential justification for the paper [13] is to show that blockchain advancement might upset the current strategies and to examine how this might occur. New headways like the blockchain may be one of the drivers of the strategy's turn of events. Close to the furthest limit of this paper, it is proposed that clients should follow enhancements in this field to get ready for expected breaks in business.

The creators of this paper [14] depict a recommendation for the association of crediting, checking, and surveying improvement projects in the Brazilian Advancement Bank using blockchain development. The proposition works on open money tasks, works on manual activities, lessens functional costs, and produces information to support the general examination of the advantages emerging from the bank's credit. In the wake of including the troubles of completing the referred to suggestion, this paper similarly discusses what ought to be conceivable as an advancement cycle using blockchain development and diagrams that have viably been done.

In this paper [15], the creator shows the uses of blockchain innovation in swarm financing. Group subsidizing is a basic utility, especially for little market adventures, as another endeavor in the midst of the unavoidable risk of a business crisis and vulnerability. It is, therefore, crucial for legislatures to work with permission to resources in little undertakings. Regardless of the best environment of the EU, swarm financing

has not been especially successful nearby. The consistent improvement of the space further addresses that preparation is a need that business visionaries desire to collect the cash to chip away at. Customary group subsidizing in the EU has been irritated with stresses over demonstrations of disregard, for instance, tax avoidance, information deviation, and coercion that brief definitive impediments on raising help works out. Incidentally, blockchain development is an instrument that makes an immense longing for the worldwide rebuilding of group financing. Development is a reformist and troublesome progression that spotlights on the decrease of associations and rules without forfeiting lawful plans for business benefits. The blockchain advancement gives a pass on openly available report that further develops straightforwardness to where individuals can lead tries without stressing over bother over the web. Most importantly, blockchain advancement abstains from information irregularity totally thusly, fitting each accomplice's prerequisites for proof of validity.

As indicated by a World Bank report from 2014, roughly 2 billion individuals don't move toward the financial organization. India represents 20.6% of the unbanked populace. In this [13] paper, the creators discussed how the square chain can expect a colossal part in the money related consideration measure. They said that FI using blockchain for inward and cross-line portions can cut down costs, shorten settlement time, and give a superior customer experience. They assumed that regulators should attract, mediate toward the starting stage and shape the turn of events.

In this paper [16], the creators have presented their musings by examining the Chinese financial region. They said that Blockchains could adjust the secret development of the portion clearing and credit information structures in banks, thusly, upgrading and evolving them. Blockchain applications in like manner advance the course of action of multi-concentrate, desolately widely appealing circumstances, which will work on the capability of monetary business. It is huge that during the time spent on each new money related turn of events, the issues of rules, capability, and security have reliably started a wide conversation. Regardless, history isn't ended by current deterrents, as the specific, authoritative, and various issues of blockchain development will ultimately be settled. Thus, the chance of planning blockchain advancement into the monetary business will without a doubt happen in the near future.

III. MATERIALS AND METHODS

Primarily, data for the research was gotten as a result of interacting and interviewing various stake holders of the banking industries and blockchain technology experts. Data was also gotten from a secondary source such as journal articles, lectures notes, newsletters and magazines.

The developmental tools and technology used includes PHP/MySQL due to their high level security and robustness also HTML 5 and CSS 5 where used to design the front end.

3.1 Analysis of the existing system

From the above auxiliary information, you will concur with me that the Nigerian banks needs earnest improvement which may be accomplished through the reconciliation of a portion of the provisions of blockchain Innovation such decentralization, encryption and approvals to work on the area's security and straightforwardness. Explicit issue in the of the current frameworks are:

I. Vulnerability to assaults because of complete centralization of framework: the banks in Nigeria utilizes a brought together design framework where each datum, data, exchange and interaction of the bank is being put away and overseen at a focal PC. With this design if the focal PC is hacked, the programmer oversees the whole framework.

II. Lack of approval of exchange: The bank exchange performed by clients isn't approved expeditiously in leaving framework. Approval of the exchange is cycle of contrasting the exchange made by client and all recently made exchanges by server. This issue of need approval of exchanges makes the framework wasteful and un-ensured. Without approval, they exchange is defenseless to malevolent propensities.
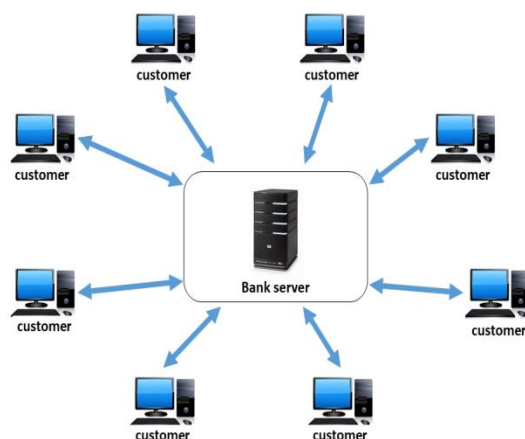
Figure 1: Existing architecture of Internet banking.

3.2 Proposed system

For the proposed framework to address the issues of the Nigerian banks, work on its security at reasonablecost and effectively open and be blockchain like framework; it should be a blended organization engineering. Blockchain is totally decentralized with a "distributed" network engineering (in contrast to the current framework, there is no focal control and the hubs have equivalent control on the organization). The current financial framework is typically a unified framework running on a customer server network engineering.

In this manner, to accomplish the joining of the blockchain and further develop security in the financial framework, there should be a think twice about both side. They framework been proposed in this exploration is a blended design, which is the mix of shared engineering and customer server engineering.

There is a type of control by the manager where the overseer can make another record (client account) and erase any record, see the exchanges of the clients, profile and furthermore alter the profile, yet the executive can't perform, change or control the exchanges of the clients in the blockchain framework. While the client can only login in to the framework and play out his/her exchange which is approved dependent on the past exchange.

The administrator/broker makes the principal block which is beginning square during account opening. Other square of exchanges is added to beginning square to frame a bunch of squares. At the point when client anexchanges subsidizes which is an exchange, by that activity client A make a square of hashed exchange which should be approved first in the server, then, at that point, added to the bunch of different squares.

The square of exchanges should be imparted to undoubtedly another diverse server so the framework is to some extent decentralized. In the circumstance of server,a been hacked, the programmer doesn't have full oversight of the framework (weakness decreased to insignificant) on the grounds that there is a duplicate of square exchanges in server B, C and D and the square of exchanges are approved in the organization of server. Thusly, any strange exchange is delivered invalid. Another significant factor is consistency, the square of data (exchange) should be reliable between the organization of servers in the framework. In the event that there is irregularity between the servers, the point of decentralization isn't accomplished.
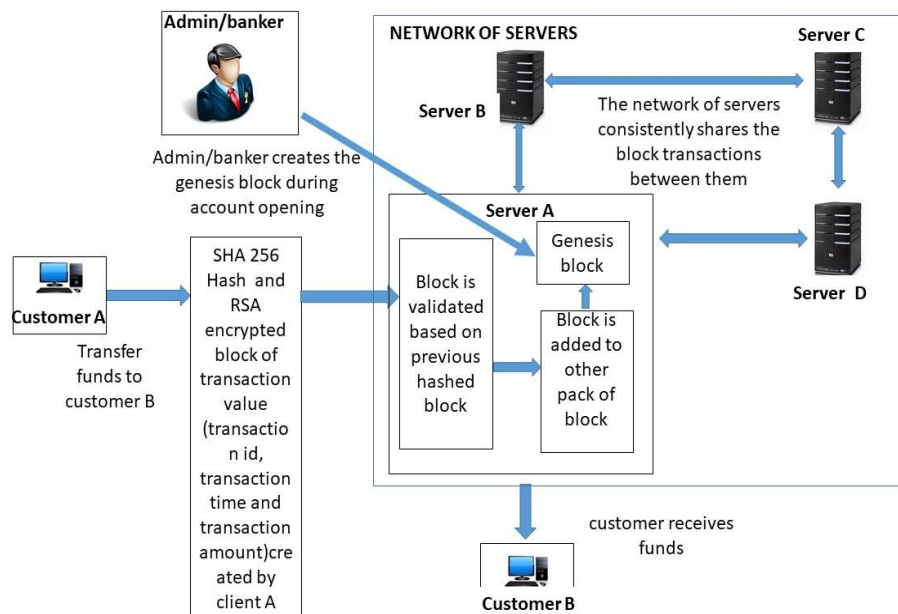
Figure 2: Proposed blockchain system with focus on decentralization

The system receives its input through the input interface, the input interface in the system include the admin login, customer login, add customer and transfer funds interface. The two login interface (admin and customer login), when the system user inputs their username and password into the login interfaces, the login interface which is running on the user's browser, communicates with server for authentications of the user credentials before the users are rendered access into their home-pages which is the output interface. The same goes for the add customer and transfer funds interface, the browser sends the user input into the server, to be stored. In the case of add customers, when the admin inputs all the new customer details the customer's account is created and customer's passbook (transaction book). Success message will be outputted to the admin. When a customer inputs the amount and transaction pin to transfer funds to other customer. A block of SHA-256 encrypted block is created and added to the existing block and a success massage is outputted to the customer when transaction is successful.

Firstly, database need to be design and developed before the system user can inputs any data to the system or perform any action. A database which is in the server is named "banking". The data-base has admin, customer and passbook table. The admin table stores admin **user name** and **password** use for authenticating admin logins. The customer table stores customer's details which can manage by the both admin and customer and be use for customer authentications. The passbook stores the block of SHA-256 encrypted transactions.

3.2.1 Strength of the proposed system
I.   **Transactions approval**: each exchange made by the client is approved by blockchain framework in the server. This course of approval is finished by contrasting the hashed square of exchanges and the past hashed square of exchange. This correlation is finished by checking clients account balance as well as the date and season of the exchanges. They exchange is delivered invalid if the exchange doesn't check mate the past exchange in the square.
II.   **Vulnerability diminished to negligible**: In contrast with the current framework which is unified and defenseless against assaults, the proposed blockchain framework is decentralized. The square of exchange is circulated in the organization of fills in as show in figure 3.1. Accordingly, the framework weakness is decreased to insignificant. On account of a digital assault the aggressor can't have unlimited oversight of the framework, since it's difficult to hack all the framework servers at that point and the framework can without much of a stretch recuperate when the other server in the framework imparts the squares of exchanges to hacked frameworks.

3.2.2   SHA 256 cryptography and hash algorithm
A hash cryptography (also termed 'digest') in a signature of a sort for an information document or mainly a text. SHA-256 produces a nearly interesting 256-bit (32-byte) signature for a text. See beneath for the source code.
A hash cannot be said to mean encryption as it cannot be unscrambled back to its original form (it is a one-way cryptography strategy and is decent in term of size as much as the original document). It is then rationale
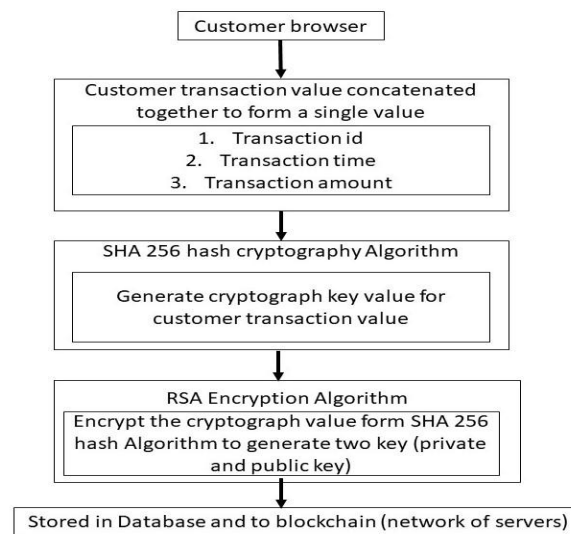
whenever these is need to analyze certain variant that are hashed in relation to some text data instead or deciphering the data to get theses to the original structures.

The client's id, time and exchange sum are connected and hash together and the hashed esteem are then thought about for approval. The cryptographic worth of a current exchange is contrasted and the past exchange cryptographic worth to guarantee the exchange was not temped with.

3.2.3 Proposed Frame for combination of SHA-256 Cryptographic Hash and RSA Encryption Algorithm (RS256 Encryption)

When the customer performs a transaction like transfer of funds. The transaction id, transaction time and transaction amount are concatenated to form the customer value. The customer value is crypto-graphed using SHA 256 hash cryptography. The cryptography process generates a cryptography key value of 64 bit of the customer value. But to achieve the level of security proposed in this research. The SHA 256 generated cryptography key value is encrypted with RSA encryption. The RSA encryption use two keys which it generates from the cryptography value which are public and private key to perform its encryption. The encrypted value is then stored in the database.

```
                    ┌─────────────────────┐
                    │   Customer browser  │
                    └─────────────────────┘
                               │
                               ▼
        ┌──────────────────────────────────────────────┐
        │ Customer transaction value concatenated       │
        │        together to form a single value         │
        │  ┌──────────────────────────────────────────┐ │
        │  │  1.  Transaction id                        │ │
        │  │  2.  Transaction time                      │ │
        │  │  3.  Transaction amount                    │ │
        │  └──────────────────────────────────────────┘ │
        └──────────────────────────────────────────────┘
                               │
                               ▼
        ┌──────────────────────────────────────────────┐
        │  SHA 256 hash cryptography Algorithm           │
        │  ┌──────────────────────────────────────────┐ │
        │  │  Generate cryptograph key value for        │ │
        │  │       customer transaction value           │ │
        │  └──────────────────────────────────────────┘ │
        └──────────────────────────────────────────────┘
                               │
                               ▼
        ┌──────────────────────────────────────────────┐
        │  RSA Encryption Algorithm                      │
        │  ┌──────────────────────────────────────────┐ │
        │  │  Encrypt the cryptograph value form SHA 256│ │
        │  │  hash Algorithm to generate two key (private│ │
        │  │            and public key)                  │ │
        │  └──────────────────────────────────────────┘ │
        └──────────────────────────────────────────────┘
                               │
                               ▼
        ┌──────────────────────────────────────────────┐
        │ Stored in Database and to blockchain (network of servers) │
        └──────────────────────────────────────────────┘
```

Figure 3.2: Proposed blockchain system with focus on cryptography and encryption.

3.2.4 Server connectivity

The data generated is ship off to servers network, the exchange of data on the blockchain is helping out through a distributed organization where the organization comprises of hubs (servers in the instances of this examination). Hubs are portrayals of servers on the blockchain network. Hubs capacity to approve block exchanges, store approved squares and, broadcast them on the blockchain network so different hubs can refresh and synchronize information. Strength of the proposed framework

3.3.5 Generate Key Pair

In this network hilter kilter cryptographic key ensure every exchange in this framework is ensured by a comprising of a private key and a public key, and the two keys are numerically connected. These keys are shaped utilizing the RSA Cryptography calculation with a critical length of 1024 pieces in hexadecimal structure. Public Key is accustomed to encoding exchange information and create exchange marks that are utilized in the exchange approval cycle and Private Key is accustomed to recognizing substances with respect to the responsibility for information and the exactness of the transacted information.

3.3.6 Block Generation

The banking transaction conducted in the RSA phase will be kept permanently using the blockchain. The blockchain keeps track of all transaction that are grouped as the occur. Such transactions conducted simultaneously by a few hubs (members), will be gathered into one square. A square is then connected with different squares and masterminded straightly dependent on the request for time. So transforming one square influences different squares. This is the thing that makes the this blockchain framework permanent, in particular if an information exchange has been recorded on the blockchain, the information can't be changed any longer. At this stage, there is additionally a hashing cycle to keep up with consistency and exactness of exchange information. Exchanges that go through the hashing system will create a special yield that capacities as a

character marker of the exchange information (digest). In this exploration, the hash calculation utilized is SHA-256, so the condensation size delivered in the hashing system is 256 pieces

3.4   System Design

Configuration is the initial step into the advancement stage for any system or item. Configuration simply put is an innovative flow. The way to a successful framework is decent planning. The most common way of applying various prose den to define a system in adequate detail to permit its real acknowledgment". It may be defining as a process where different methods are applied and standards used to define a device, a cycle or a framework in sufficient detail in other make room for acknowledgment. Programming configuration sits at the specialized portion of the system programming and is been applied by paying little heed to the improvement worldview that is utilized. The framework configuration fosters the compositional detail needed to construct a framework or item. As on account of any deliberate methodology, this product also has gone through the most ideal plan stage tweaking all productivity, execution and precision levels (Badawai,2018).

The framework accepts its contribution through the info interface, the information interface in the framework incorporate the administrator login, client login, add client and move finances interface. The two login interface (administrator and client login), when the framework client inputs their username and secret word into the login interfaces, the login interface which is running on the client's program, speaks with server for confirmations of the client qualifications before the clients are delivered admittance into their home-pages which is the yield interface. The equivalent goes for the add client and move supports interface, the program sends the client input into the server, to be put away. On account of add clients, when the administrator inputs all the new client subtleties the client's record is made and client's passbook (exchange book). Achievement message will be yielded to the administrator. At the point when a client inputs the sum and exchange pin to move assets to another client. A square of SHA-256 scrambled square is made and added to the current square and a triumph rub is yielded to the client when exchange is effective.

First and foremost, information base should be plan and created before the framework client can inputs any information to the framework or play out any activity. An information base which is in the server is named "banking". The information base has administrator, client and passbook table. The administrator table stores administrator client name and secret key use for confirming administrator logins. The client table stores client's subtleties which can oversee by the both administrator and client and be use for client verifications. The passbook stores the square of SHA-256 scrambled exchanges.

3.4.1 System Design Specification

System specification can be formal or informal. The informal system specification the is used in this research. It is a kind of system specification that describe various aspect of the system verbally. Informal system specification can also use diagram carry out system design specification. However, it is not compulsory to use program provided the description of the system is well given.

The major functional requirement specification of this system is that SHA-256 encryption and decentralization of transaction. Validation of transaction is also an important specification.

3.4.2   Interface specification

The interface is where data can be supplied to and out the system. It has interface for both the admin and customer login, the interface to create and an account for the customer and for customer to transfer funds to the other customer, interface for viewing profile and transactions.

3.4.3   Database specifications

The database consists of admin/bankers, customers and transactions(passbook). The field of the database should be according to the information needed in the fields. The names and other personal details should have variable characters.

3.4.3.1 Input Interface Design

The input interfaces of the application consist of some input functionality which can be accessible by the administrator and user or customer of the system.

The input design of this software includes:

i. **Administrator login:** is the first page the admin sees (index page) when the web system loads on the browser, admin have to input his or her **username** and **password** and when he clicks the login button, the input is authenticated before the admin can access the admin home page, where the admin can manage customers account. The admin manages the customer account by performing actions such as: creating, updating, and editing customer accounts.

ii.   Customer login: is the first page the customer sees (index page) when the web system loads on the browser, customer have to input his or her **username** and **password**. The input is authenticated before the customer can access the customer home page, where the customer can transfer funds to other customers.

iii.   Add customer (this functionality is only available to the administrator): in this input page the admin creates an account for the customers, the genesis block is also created when the customer is account is created. The admin inputs the customer details in this page and submit in other to create the customer's account.

iv.   Transfer funds: this functionality is only available to the customer; the customer inputs the amount to be transferred to other customer and his/her pin to confirm the transaction. These processescreate a block of transaction which add to pack of other transactions and the genesis block.

3.5   Database Design

Files held in this project are made up of different data types. These types are integer, Character, Double, Date, etc. Some of the files used are designed and linked with database. Also in the project design, MySQL database was used.

Below is the database specification for the files used.

3.5.1   Customer: the design layout of database tables for customers

File Name	Data Type	Size	Relation
Cust_id	Int	11	**Primary key**
First_name	Varchar	30	Not null
Last_name	Varchar	30	Not null
Gender	Varchar	10	Not null
Dob	Date		Not null
Bvn	Int	20	Not null
Email	Varchar	30	Not null
Phone_ no	Varchar	20	Not null
Address	Varchar	255	Not null
Branch	Varchar	30	Not null
Account_no	Int	11	Not null
Pin	Int	4	Not null
Uname	Varchar	30	Not null
Pwd	Varchar	30	Not null

3.5.2   Administrator: the design layout of database tables for admin.

File name	Data Type	Size	Relation
Id	Int	11	**Primary key**
Uname	Char	25	Not null
Pwd	Char	25	Not null

3.5.3   Passbook (Transactions): the design layout of database tables for customer's transactions.

File name	Data type	Size	Relation
Trans_id	Int	11	**Primary key**
Trans_date	Datetime		Not null
Remarks	Varchar	255	Not null
Debit	Int	11	Not null
Credit	Int	11	Not null
Balance	Int	11	Not null
PTranshash	Varchar	64	Not null
Transhash	Varchar	64	Not null

3.6 SYSTEM MODELING
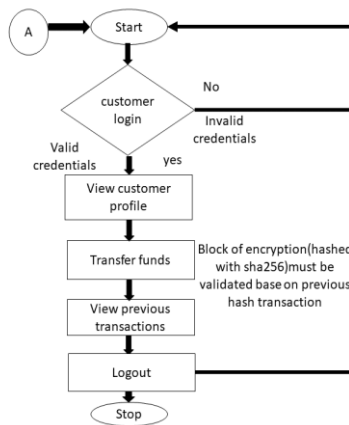
Figure 3 Proposed system flowchart 1
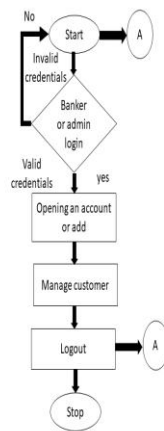
Figure 4: Proposed system flowchart 2

System Modeling Using UML Tools
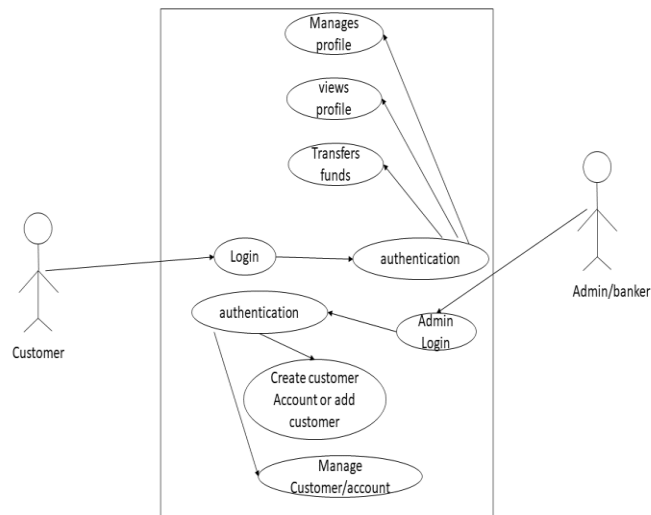
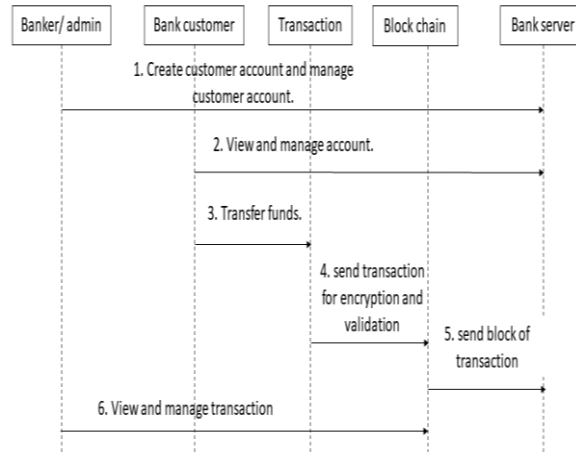**Figure 5:** Proposed uml use case diagram for the system.

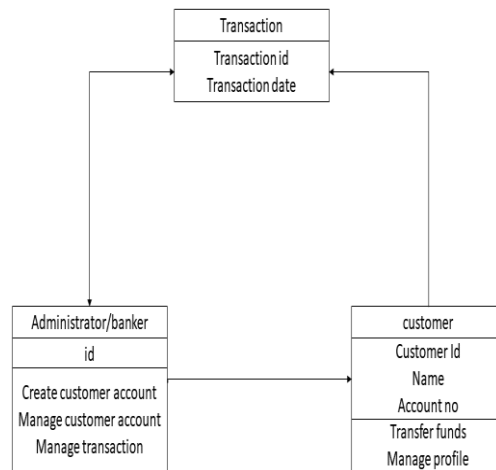**Figure 6:**Sequence diagram forproposed system.
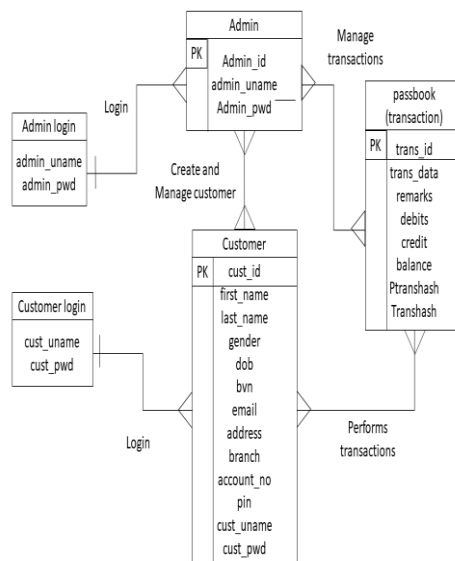

Figure 7: Class diagram for proposed system

**Figure 8:** Proposed System Entity Relation (E-R) Diagram

IV. System Implementation

In this section all the implementation details are presented that include the input design interface implementation, output design interface implementation and database or file system implementation.

The integration of blockchian technology into E-banking system was a successful. After several tests run on the developed system. The administrator can create the genesis block by add customer function. Which is creating customer account. The customer can perform transfer fund's (transaction) and block of encrypted block is created and added to the genesis block.

The banking system is secured and reliable because the transactions are encrypted and the system is decentralized. Therefore, the aim of the study is achieved.

4.1 Result
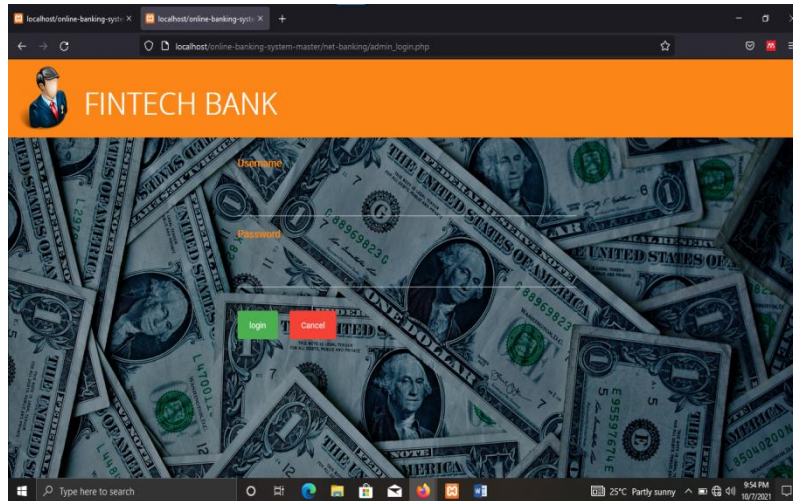
Figure 9: Administrator Login Design Implementation**:** this where the admin inputs their username and password for authentication to the access admin homepage.
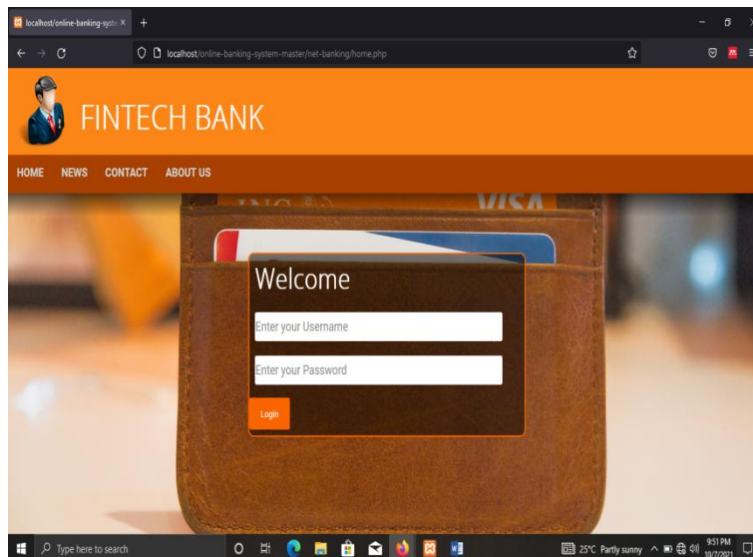
Figure 10: Customer Login Design implantation: this is where the Customer input their username and password for authentication to the access Customer homepage.
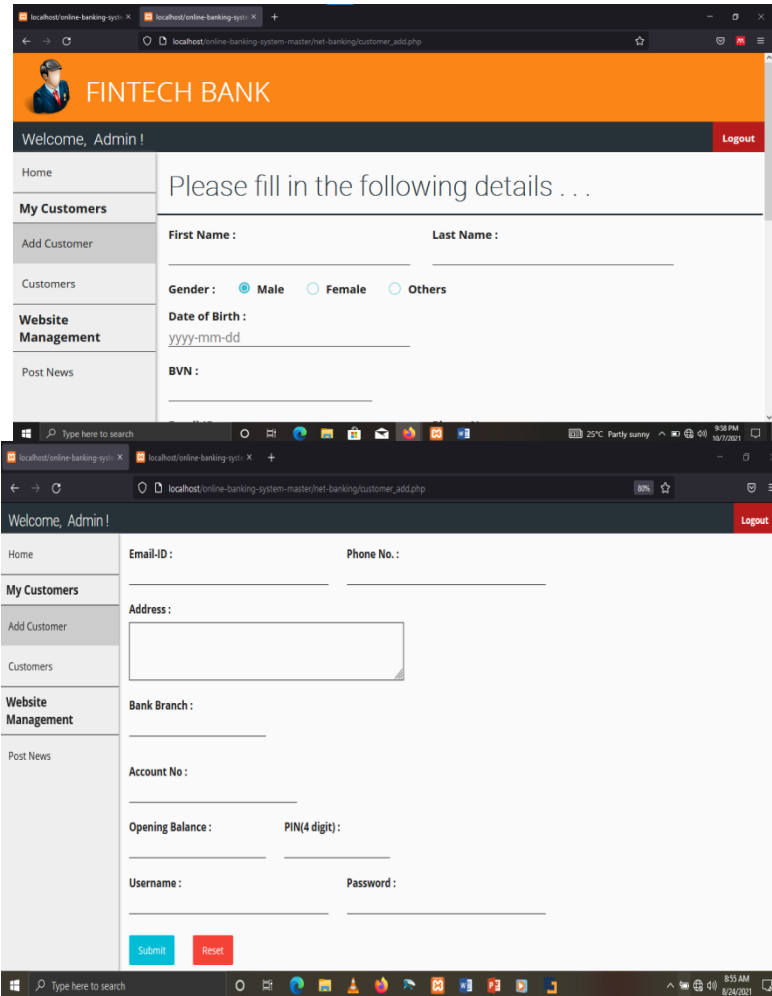
Figure 11: The Add Customer Design Implementation: the admin creates customer account in this interface.
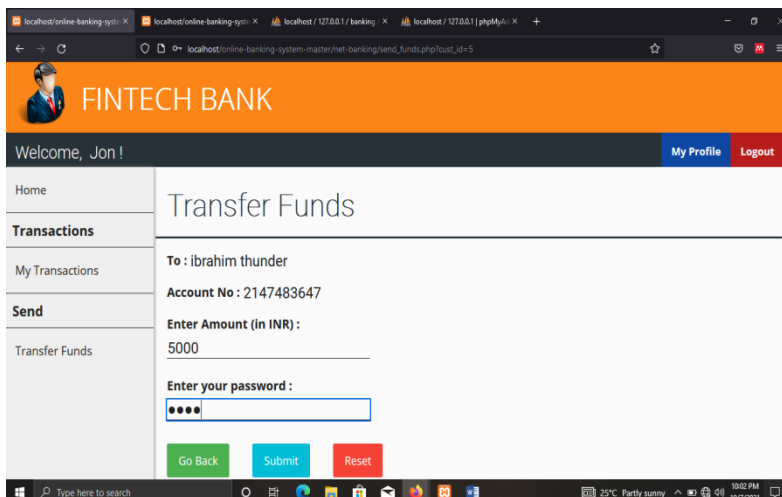
Figure 12: Transfer Funds Design Implementation: the customer transfers funds to other customers in this interface.

Output Interface Design Implementation
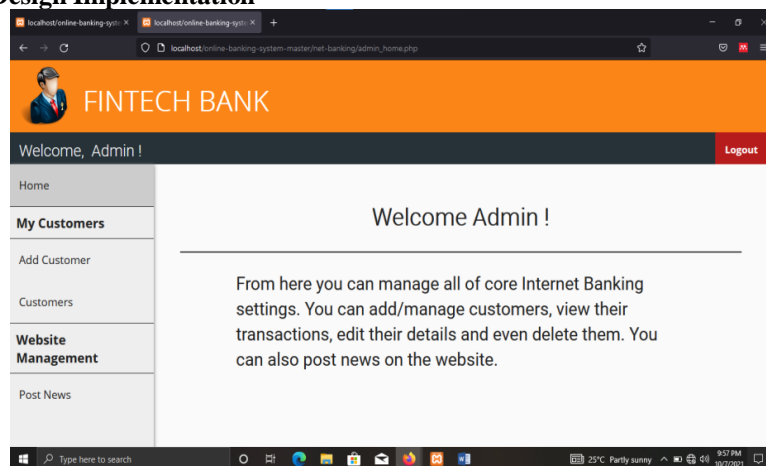
Figure 13: Administrator Home Page Design Implementation: this is the admin home page that is display to the admin when the admin login is authenticated, from here the admin can manage the entire system.
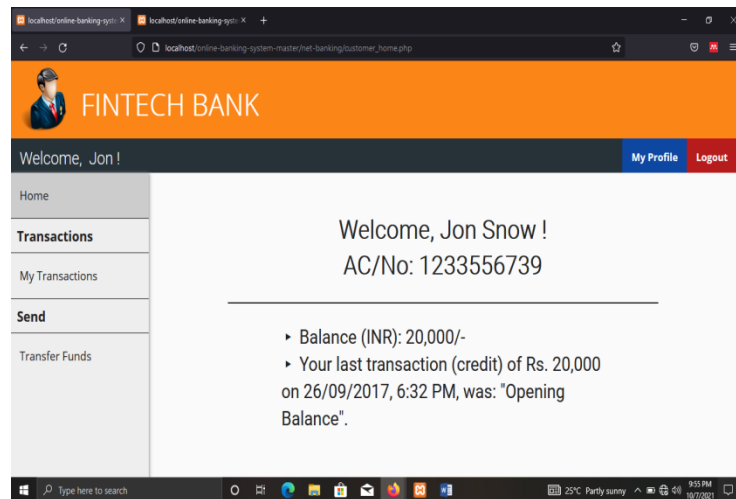

Figure 14: Customer Home Page Design Implementation: this is the Customer home page that is display to the Customer when the Customer login is authenticated, from here the Customer can manage their profile and transfer funds.
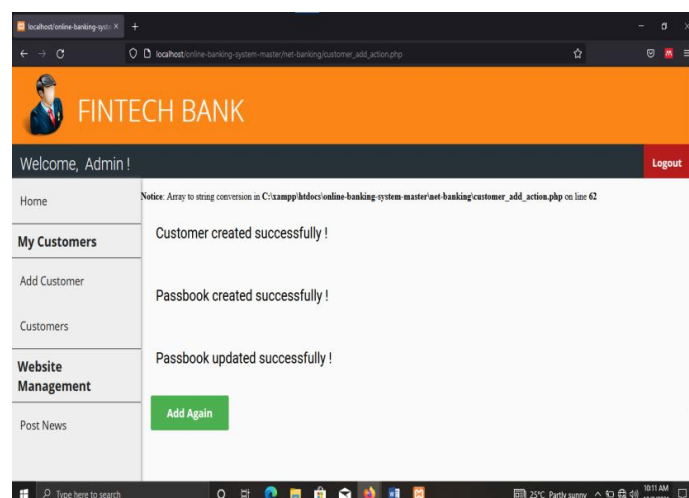
Figure 15: The Add Customer Output Design: this interface is outputted to show success massage to the admin when customer is created.
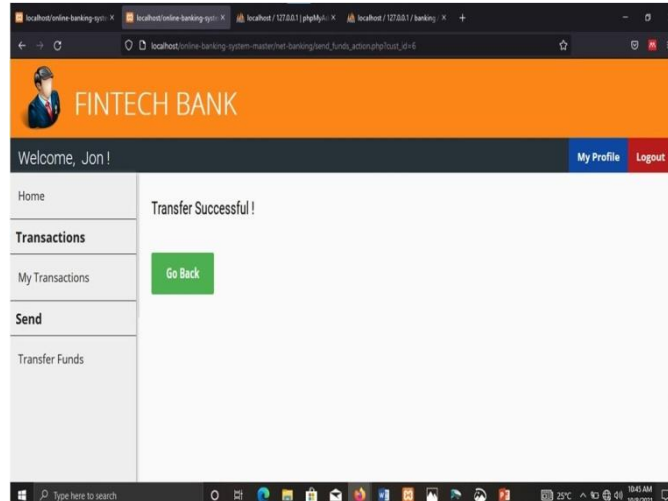
Figure 16: Transfer Funds Output Design Implementation: this interface is outputted as success massage to the customer when customer performs successful transaction.

Other Interface Design Implementation
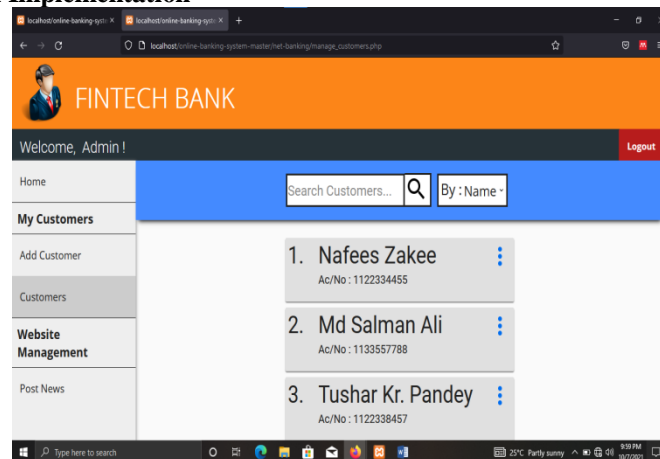
Figure 17: Customers Profile Design Interface Implementation: this is the customers profile, which can only be accessed by admin.
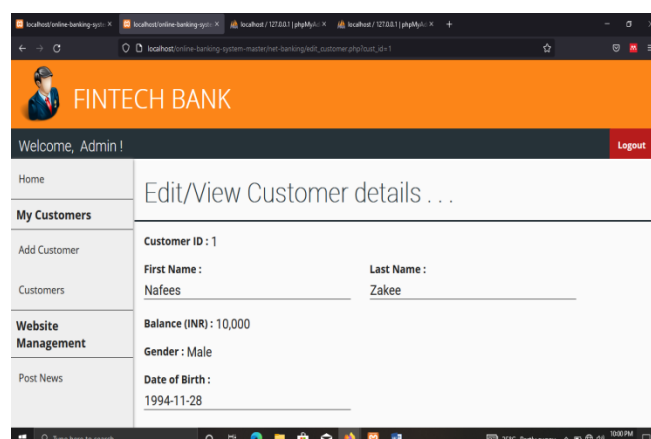
Figure 18: Edit Customer Profile Design Interface Implementation**:** this is the customers profile, this function can only be accessed by the admin.

File System Implementation

Figure 21: Customer profile File System Implementation: this is the customer table in the database.

V. DISCUSSION OF RESULT

Figure 13is the Administrator Home Page, this is the admin home page that is display to the admin when the admin input his username and password in the admin login page and is authenticated, from here the admin can manage the entire system.

Figure 14 is the Customer Home Page Design, this is the Customer home page that is display to the Customer when the Customer login is authenticated, from here the Customer can manage their profile and transfer funds.

Figure 15 is the Add Customer Output Design; this interface is an output to show success massage to the admin when customer is created by inputting a new customer details in create customer page.

Figure 16 is the Transfer Funds Output Design; this interface is outputted as success massage to the customer when customer performs successful transaction by inputting the amount and password in transfer fund page.Most of the researches and works on blockchain focus on the technology "BLOCKCHAIN" as whole, the researchers and developers implement blockchain in many sectors like health care, supply chain, production and financial sector (e.g. banks). From existing literatures reviewed, the implementation of blockchain in financial sectors especially the banks usually end up with issues like regulation of blockchain where there is a need for government and policy makers to regulate the use of blockchain and its impact on this important sectors for the sake of profit seeking banks. In the African continent and Nigeria in specific, most of the banks are yet to implement any form of blockchain.To this end, this research focuses on the practical aspects of blockchain technology. From the result of the implementation not only those this research eliminates the need for any form of regulation but the system gives maximum security by using SHA 256 cryptography to secure the customers transaction and consolidating it using RSA encryption to strengthen the security layers of this framework. The system also validates transaction by making a   comparison of all previous and current hashed transactions.Finally, this research has eliminated the need for regulation of blockchain focusing on the security aspects of blockchain which is only SHA 256 cryptography rather than the whole blockchain technology, with an improvement in the security levels by adding RSA encryption on SHA 256 in a bid to tackle cases of security loop holes in SHA 256 and an improvement on some of the works Charles, Jumamil and Aranyawat (2017).

VI. CONCLUSION

The point of this review is incorporate blockchain in e-banking framework to work on its security. In this review a new blockchain framework has configuration, model, create and executed, from the aftereffect of this review the new blockchain framework is secure with SHA-256 cryptographic and approved based past hashed exchanges. The current financial framework has been concentrated on serious and the shortcoming of the framework has been called attention to. In light of the aftereffect of study the new blockchain framework approves client's exchanges by contrasting new exchange hash and past exchange hash. The exchange is ruin if there should be an occurrence of miss-match. The framework is likewise decentralized as indicated in the proposed framework design base on the aftereffect of the review. The square of exchanges is ship off the organization of servers in a steady way. In spite of the fact that Blockchain has been coordinated in the e-heating framework in this exploration, the framework created didn't give space for store and pull out from clients account. The client can just exchange and get assets from different clients. This exploration is likewise excessively restricted such that main clients with a record with the e-bank can move or get reserves. Which

means the clients of the e-bank can't move or get assets from different banks. In this examination, blockchain was carried out in e-banking framework utilizing PHP, JavaScript, HTML and CSS, in light of the fact that this is a web base framework the referenced programming dialect are they best and simple carry out.

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