Securing KYC Documents by using Blockchain Technology

K. Prudhviraj[1] Dr. K Venkataramana[1]
[1]Student [2]Professor
[1,2]Department of Computer Applications
[1,2]KMM Institute of P.G. Studies, Tirupati, India

Abstract— In the future most of market deals with the Blockchain Technology, because this technology has decentralized database that records the data such as finance contracts, physical assets, and supply chain information. It has achievement over the time and is currently dominated and used by Bitcoin. It is not a new technology but it shown up with the bitcoin, now a days some of the transactions are done with the crypto currency. It gives innovative solutions for FinTech Industry. This technology has energized the financial services industry globally. This concept already brought a disruption in the financial industry. Coming the some of the Industries, which already implementing this technology are, Deutsche Bank, DBS Bank, EBA (Euro Banking Association), US Federal Reserve are some of Financial Sector Banks are going to use this Technology in as like Digital Payments, Assets. This technology is Transparent Business way. So this is very secured and transparent. It is like as distributed ledger. In this paper we have the securing the KYC Documents by using Blockchain Technology. Through by using this Technology we can immutable the data of KYC. If the data is immutable then automatically it will be secured without tampering the data.

Key words: Crypto Currency, Blockchain, Distributed Ledger, Digital Payments

I. INTRODUCTION

Blockchain is a Technology the digital, distributed and centralized ledger underlying most crypto currency and virtual currencies (bitcoin, ethereum) that are responsible for transactions without the need for intermediary (Bank). Current banking system had flaws. In particular, banks acting as third-parties and unnecessary cuttings transactions fees as which is not needed. With Blockchain, real-time transactions are a possibility even across a borders, while banks, intermediaries are not involved in this technology. It is secured, inexpensive and fast transaction. The blockchain decentralized system is going to change the entire human life from the way the users transact business or manage assets, by the way that how you are using like car rents, vote in elections, along we can transform banks and other financial institutions, hospitals, and governments. Blockchain is a group of blocks (or) chain of blocks. It continuously increase the list of records called Blocks. Each block contains some data related to some context in blockchain which is ledger or transaction. It holds the ledger of transactions from the beginning of the time. The first block is called the genesis Block. Each block in the chain has reference to the previous block. The number of distributed blocks is linked and secured with the help of concept of cryptography. In this paper we are going to see about the Blockchain Technology, architecture, working, proof of work, and some of applications which is useful for the future.

In this Paper Securing the KYC Documents is important that means when employees changed to company to company then employee need to provide the KYC Documents for every Company according to the working his/her working history. In this paper I will give a solution for this. One centralized registry KYC portal can done all the things see the below image.
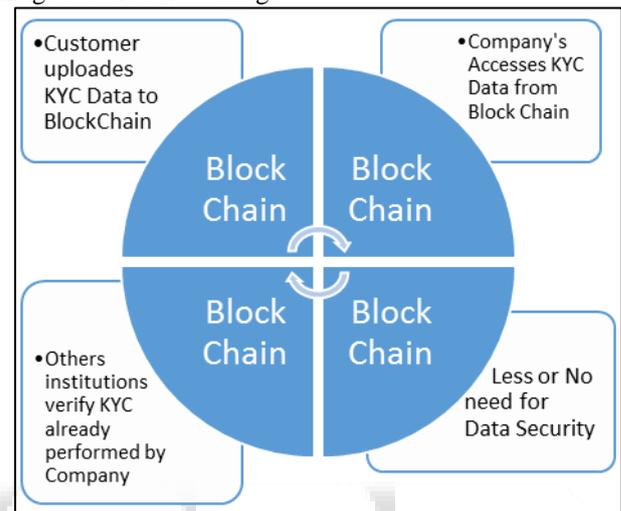

Fig. 1: Central Model to KYC

Even though financial services sector has seeking solutions for the KYC's identities problem for a long time. This technologies gives the solutions for the KYC's identities.

II. LITERATURE SURVEY

Prince Sinha, [1] suggested a system that the Decentralized database (IPFS) to store the information of users as well as verification documents with standard legacy KYC System. In this system the user has to provide his/her details including ID Proofs and photograph. By providing the username user can check his/her submitted document in future or can update the document. This system will segregate the username to generate a public-secret key pair. A new user has to download the key file and store safely. This key is used during signing the transaction and every user has his own unique key. User data is transferred to JSON object then changed to string, then it can be stored in IPFS.. This system introduced Keythereum an open source javascript tool is used for key generation purpose.

Wazen Shbair and Jerome Francois [2] suggested the Grid'500 platform provides a real physical hardware and networking infrastructure is connected with the certain measurement features to be considered all type of application in the blockchain, in different aspects with extensive test scenarios. This system will runs the nodes and start mining, each node will profits some Ethers consumed later to release in the smart contracts and to transactions should be send to the interconnected network. This task is to test the configuration of the blockchain and to make it ready and steady. This system made orchestration tool and how it would

be used with Grid'5000 to provide a missing tool to control blockchain experiments. They implemented Blockchain POC in the KYC and it used Ethereum blockchain and used the solidity programming language to implement the smart contracts.

Jenitha Thavanathan [3] Suggested IPO Framework of Business Process Change, here Every Business organization separate structural and positional circumstance and aspirations, is defined by industry or organizational change. The Strategy-driven outcomes help identifying specific activities and process through which organization can achieve its business objectives, also ensures the business models. In Blockchain technology, transparently everything of value should be tracked. All the transactions recorded in the ledger, it then gets broadcast to a P2P network mode consisting of computers (nodes). This network node provides access to synchronized copies of information that are continually being replicated, which makes the network highly secure and clear the traffics of music. In this study, permission-less ledgers are open to the public and who interested can participate as node in the making decision. The public ledger should not own by anyone it should in the read only and private ledgers function within a closed network. KYC applies to all institutions licensed to perform the business transactions under the financial act.

Vimalkumar Pachaiyappan and R.Kasturi, [4] Suggested the DLT technique will helps to overcome the existing issues like manual KYC process submitting. They suggests that Corda is also a distributed ledger designed from the genesis block manage the financial data between institutions. Mostly famous blockchain is Ehereum, but it mainly gives results in to develop public blockchains that means every participant shares all the data. But in the business we need privacy also at that we need to give access data to only certain participants to the peer networks for this purpose corda implemented.

Jose Parra Moyano and Omari Ross [5] was suggested the DLT, that proposes a solution to increment cost of the KYC Process and the customer satisfaction should be less. By using Blockchain technology they introduce DLT gives us to gather execute of unwanted duplicated tasks this delivers greater cost savings than would any efforts to merely make these duplicated tasks more cost efficient. DLT opens the creating of a chronological, decentralization, inter banking ledger in financial institutions that needs to conduct the same KYC verification tasks for that user can verify the result of the process that has already been conducted for that customer.

III. PROPOSED SYSTEM

A. Manual KYC Submitting to Institutions:

Now – a – Days maximum employees are facing problems in the companies with KYC (Know your customers) documents. If they want to change the company they need to submit KYC Documents again and again when they need to change. See the below Fig. 2.
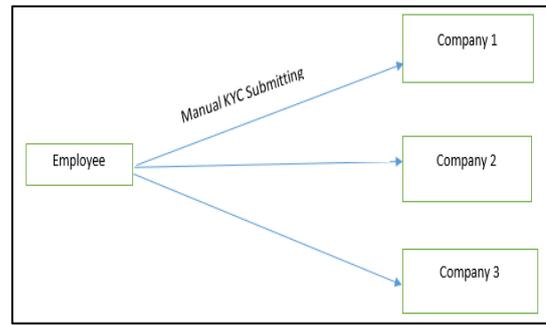

Fig. 2: Manual Submission of KYC Documents.

B. By using KYC HUB Submitting to Institutions:

In this paper the proposal a portal called the KYC HUB. In this portal it is secured without authentication of employee no institution will see his/her KYC Document. Simply we can say that P2P Data transfer. By the approval of Employee, Employer will take out the KYC Document.
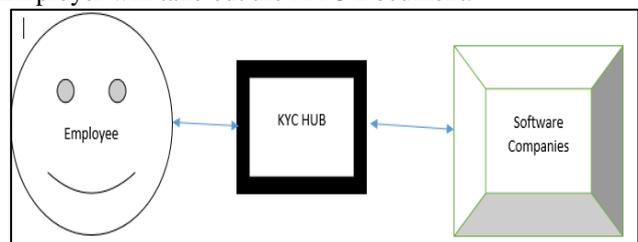

Fig. 3: Submitting KYC Docs by using KYC HUB.

By using SHA256 Algorithm we can encrypt the data and securing with the Employee private key, this all are done by the Block Chain Technology. In the KYC HUB is immutable and it works with decentralized technique.

IV. PROPOSED ALGORITHM

A. Proof of Work (PoW):

1) Client to Server:
1) Step 1: Request Service.
2) Step 2: Choose and Challenge the Puzzle.
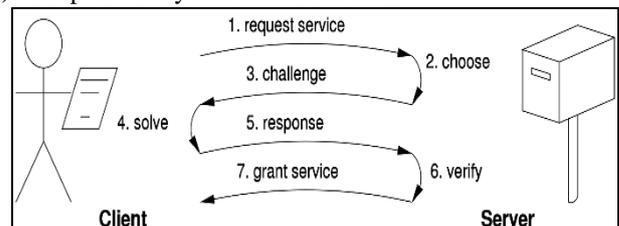3) Step 3: Solve and Response.
4) Step 4: Verify and Grant Service.

Fig. 3: Client, Server interaction.

2) Solution Verification:
1) Step 1: Compute and Solve puzzle.
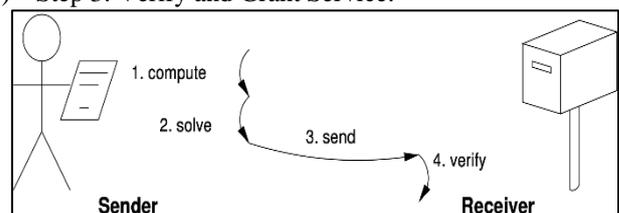2) Step 2: Send
3) Step 3: Verify and Grant Service.

Fig. 4: Solution Verification by Sender.

3) Example for SHA256:

Let's decide to take an input and that input will changed to SHA256 Encryption Code

B. Implementing this in Python:

1) Input:

```
1  import hashlib
2  mystring = input('Enter String to hash: ')
3  # Assumes the default UTF-8
4  hash_object = hashlib.sha256(mystring.encode())
5  print(hash_object.hexdigest())
```

2) Output:

We need to enter the input string whatever we want

```
PS C:\Users\prudh\Desktop> python fun.py
Enter String to hash: K.M.M Institute of P.G. Studies
```

3) Result

```
PS C:\Users\prudh\Desktop> python fun.py
Enter String to hash: K.M.M Institute of P.G. Studies
80883c20a77a03ef8096305d4d0d61aff9539e1aa66cb8c52fee087ccd39695c
PS C:\Users\prudh\Desktop>
```

The Result show the hash value as above: "80883c20a77a03ef8096305d4d0d61aff9539e1aa66cb8c52fee087ccd39695c" this is the hash value for the K.M.M Institute of P.G. Studies

V. RESULTS AND ANALYSIS

Institutions need to request the KYC Documents in institution portal

Select	Document Type
☑	Aadhar
☑	Pan Card
☑	Passport
☐	Bank
☐	Driving License
☐	Election Card
☐	Ration Card
Submit	Cancel

Fig. 4: Employer requests the KYC in KYC HUB

After the certain documents selected by the institutions a block is created for the KYC of that employee.

Each block is decentralized with some high configuration applications and make a certain kyc very secure

Here is some of the blocks the blocks in for employees created. As per the institution requests

```
Block Hash: c43c9060a29ac64c28002c1c2331dff99108ea507583866f7a5a8e0a4ae63a69
BlockNo: 1
Block Data: Block 1
Hashes: 105447
---------------
Block Hash: dbf2caeaf2994f956a5fcbf2b93a2488826741be17e30b24d47929eee3638191
BlockNo: 2
Block Data: Block 2
Hashes: 3386342
---------------
Block Hash: bebe32496512dda08b6cfb5a61ff19ef89253cfa3036cca32df16b6cde03d82b
BlockNo: 3
Block Data: Block 3
Hashes: 769620
---------------
Block Hash: 6e5bf06558cf1da856d6e273470c76130fb70f8ce86afc3979c173f87e11702d
BlockNo: 4
Block Data: Block 4
Hashes: 230221
---------------
Block Hash: ede98e8f73e835c419b48384ae48385ffea1f94ee518316ce2e55d474bc32578
BlockNo: 5
Block Data: Block 5
Hashes: 835795
---------------
Block Hash: 695e8923bbbcc7bbab34a2deb0a897d9e82539ab19125f12ca55f83ac266c910
BlockNo: 6
Block Data: Block 6
Hashes: 983770
---------------
Block Hash: 5097cb619b3084bd3a67e1676a82a3f07110b5988ce74c097ac3eda627127e40
BlockNo: 7
Block Data: Block 7
Hashes: 64554
---------------
Block Hash: b4270a9c11b7c9689be735669c824d3715b7498a2fe49ed599cbf4e524e4680c
BlockNo: 8
Block Data: Block 8
Hashes: 942754
---------------
Block Hash: c6c27b8b79ded56199fb89aff1498288988895111a2acb5c83c1da92477af728
BlockNo: 9
Block Data: Block 9
Hashes: 2762511
---------------
Block Hash: 620894ef1669199d36a3e71a9e22017be073cbe3cfc7cc533aa928d984601aa8
BlockNo: 10
Block Data: Block 10
Hashes: 249011
```

Fig. 4: Employees given the documents to KYC HUB

VI. CONCLUSION

In this Paper the study of Blockchain and Technology and its application, this paper takes the Application E-KYC Model and how its improved without hesitation of the employee and Institution work. Using this system KYC can be easily done in the side of Employer and Employee sides. This Application can filter the fake institutes and fake candidates according to secure KYC Management. Later this paper improvised the decentralized application using Ethereum, DAPPS. Using this System we can mobilize the genuine employees and software companies.

REFERENCES

[1] Prince Sinha 1, Ayush Kaul 2, "Decentralized KYC System", International Research Journal of Engineering and Technology (IRJET), B.E Computer Engineering University of Mumbai, India. Volume: 05 Issue: 08, August 2018.

[2] Wazen M. Shbair, Mathis Steichen, Jerome Francois, Radu State, University of Luxembourg, "Blockchain Orchestration and Experimentation Framework: A Case Study of KYC", April 2018 DOI: 10.1109/NOMS.2018.8406327.

[3] Jenitha Thavanathan, "Process Innovation with Blockchain in KYC Processes in banks: A case study", Norwegian University of Science and Technology (NTNU). Industrial Economics and Technology Management, September 2017.

[4] Vimalkumar Pachaiyappan 1, R. Kasturi 2, "Block Chain Technology (DLT Technique) for KYC in FinTech Domain: A Survey", International Journal of Pune and Applied Mathematics(IJPAM), Vels Institute of Science, Technology & Advanced Studies, Volume 119 No. 10 2108, 259-265.

[5] J. Parra Moyano, University of Zurich, Moussonstrasse, Switzeland, O. Ross, University of Copenhagen, Denmark, "KYC Optimization using Distributed Ledger Technology" November 2017