ISSN: 2366-1313

OPTIMIZING THE KYC VERIFICATION SYSTEM USING ETHEREUM BLOCKCHAIN

[1]MR. J. MAHESH, [2]J. RUPA, [3]K. YASHODHADEVI, [4]M. SANJEEVANA

[1](Assistant Professor) ,**CSE.** Teegala Krishna Reddy Engineering College Hyderabad

[234]B,tech scholar ,**CSE.** Teegala Krishna Reddy Engineering College Hyderabad

ABSTRACT

With today's advances in digitalization, people use their personal identity documents on a daily basis, which are shared with third parties without their prior authorization and maintained in a number of random places. Government organizations, banks, credit agencies, and other financial institutions keep such identity information in their own databases. The presence of such sensitive information in several places raises the likelihood of vulnerabilities. For a long time, the financial industry has been looking for answers to such difficulties, and one feasible alternative is blockchain. By keeping a single safe database on blockchain, the Know Your Customer (KYC) verification procedure reduces the repetitive KYC checks that banks presently do. Because blockchain is immutable and unalterable by definition, illegal modifications to data are instantly invalidated. Blockchain's decentralized design will enable the collection of data from different authoritative service providers into a single immutable, safe, and verified database. The Blockchain KYC system uses a secure, public digital ledger to provide rapid and fully secure identity verification.

1. INTRODUCTION

KYC stands for 'Know Your Customer,' and in India, it is a mechanism mandated by the Reserve Bank of India to validate the identity and address of all clients doing financial transactions with financial institutions. KYC is an efficient method for an organization to validate a customer's identity.KYC is an important tool since it protects financial institutions and keeps unlawful operations under control. Banks have the right to confirm an organization's

ISSN: 2366-1313

legal existence through KYC, which also involves certifying clients' operational addresses and verifying the names of their beneficial owners and authorized signatures. Essentially, KYC is required whenever any type of consumer desires to undertake any type of financial transaction. The consumer provides identification papers to the financial institution as part of the KYC procedure. This helps the bank know that the money invested by the customer was not done for the purpose of money laundering or other fraud. A blockchain is a form of distributed ledger technology (DLT) that consists of blocks of records that are cryptographically connected. The central function of blockchain is to securely transfer data among peers who may not trust each other. Blockchain can be said to be logically centralized but organizationally decentralized. Blockchain technology can best help secure identity data by leveraging its core features, such as decentralization, immutability and transparency.

OBJECTIVE:

The objective is to enhance the security and efficiency of identity verification processes by leveraging blockchain technology. By consolidating personal identity data into a single, immutable, and secure database, the goal is to reduce redundancies in Know Your Customer (KYC) checks, mitigate the risk of unauthorized data sharing, and establish a rapid and foolproof identity verification system.

SCOPE:

The scope is to revolutionize identity verification in the digital era by implementing a Blockchain KYC system. This involves consolidating personal identity data onto a secure blockchain, mitigating vulnerabilities arising from dispersed data storage. The system aims to streamline KYC procedures, eliminate redundancy, and enhance security by creating a decentralized, immutable, and verified database accessible to authorized service providers.

1.1 SOFTWARE REQUIREMENTS

Software requirements deal with defining software resource requirements and prerequisites that need to be installed on a computer to provide optimal functioning of an application. These requirements or prerequisites are generally not included in the software installation package and need to be installed separately before the software is installed. Platform – In computing, a platform describes some sort of framework, either in hardware or software, which allows

ISSN: 2366-1313

software to run. Typical platforms include a computer's architecture, operating system, or programming languages and their runtime libraries. Operating system is one of the first requirements mentioned when defining system requirements (software). Software may not be compatible with different versions of same line of operating systems, although some measure of backward compatibility is often maintained. For example, most software designed for Microsoft Windows XP does not run on Microsoft Windows 98, although the converse is not always true. Similarly, software designed using newer features of Linux Kernel v2.6 generally does not run or compile properly (or at all) on Linux distributions using Kernel v2.2 or v2.4. APIs and drivers – Software making extensive use of special hardware devices, like highend display adapters, needs special API or newer device drivers.

A good example is DirectX, which is a collection of APIs for handling tasks related to multimedia, especially game programming, on Microsoft platforms. Web browser – Most web applications and software depending heavily on Internet technologies make use of the default browser installed on system. Microsoft Internet Explorer is a frequent choice of software running on Microsoft Windows, which makes use of ActiveX controls, despite their vulnerabilities.

1) PYTHON IDLE (3.7.0)

2) Node JS

3) Visual Studio Community Version

4) Ganache

5) Metamask - Chrome extension

6) LANGUAGES BACK-END: Python, Java Script, Solidity

7) LANGUAGES FRONT-END: HTML, CSS, JS, Boot Strap

8) FRAMEWORK: Flask

1.2 HARDWARE REQUIREMENTS

The most common set of requirements defined by any operating system or software application is the physical computer resources, also known as hardware, A hardware requirements list is often accompanied by a hardware compatibility list (HCL), especially in case of operating systems. An HCL lists tested, compatible, and sometimes incompatible hardware devices for a particular operating system or application. The following sub-sections discuss the various aspects of hardware

ISSN: 2366-1313

requirements. Architecture – All computer operating systems are designed for a particular computer architecture. Most software applications are limited to particular operating systems running on particular architectures. Although architecture-independent operating systems and applications exist, most need to be recompiled to run on a new architecture. See also a list of common operating systems and their supporting architectures. 4 Processing power – The power of the central processing unit (CPU) is a fundamental system requirement for any software. Most software running on x86 architecture define processing power as the model and the clock speed of the CPU. Many other features of a CPU that influence its speed and power, like bus speed, cache, and MIPS are often ignored. This definition of power is often erroneous, as AMD Athlon and Intel Pentium CPUs at similar clock speed often have different throughput speeds. Intel Pentium CPUs have enjoyed a considerable degree of popularity, and are often mentioned in this category.

Memory – All software, when run, resides in the random access memory (RAM) of a computer. Memory requirements are defined after considering demands of the application, operating system, supporting software and files, and other running processes. Optimal performance of other unrelated software running on a multi-tasking computer system is also considered when defining this requirement. Secondary storage – Hard-disk requirements vary, depending on the size of software installation, temporary files created and maintained while installing or running the software, and possible use of swap space (if RAM is insufficient). Display adapter – Software requiring a better than average computer graphics display, like graphics editors and high-end games, often define high-end display adapters in the system requirements. Peripherals – Some software applications need to make extensive and/or special use of some peripherals, demanding the higher performance or functionality of such peripherals. Such peripherals include CD-ROM drives, keyboards, pointing devices, network devices, etc.

1)Operating System : Windows Only

2)Processor : i5 and above

3)Ram : 4gb and above

4)Hard Disk : 50 GB

1.3 FEASIBILITY STUDY

The feasibility of the project is analyzed in this phase and business proposal is put forth

ISSN: 2366-1313

with a very general plan for the project and some cost estimates. During system analysis the feasibility study of the proposed system is to be carried out. This is to ensure that the proposed system is not a burden to the company. For feasibility analysis, some understanding of the major requirements for the system is essential. Three key considerations involved in the feasibility analysis are

ECONOMICAL FEASIBILITY

- **TECHNICAL FEASIBILITY**
- **SOCIAL FEASIBILITY**
- **1.3.1 ECONOMICAL FEASIBILITY**

This study is carried out to check the economic impact that the system will have on the organization. The amount of fund that the company can pour into the research and development of the system is limited. The expenditures must be justified. Thus the developed system as well within the budget and this was achieved because most of the technologies used are freely available. Only the customized products had to be purchased.

1.3.2 TECHNICAL FEASIBILITY

This study is carried out to check the technical feasibility, that is, the technical requirements of the system. Any system developed must not have a high demand on the available technical resources. This will lead to high demands on the available technical resources. This will lead to high demands being placed on the client. The developed system must have a modest requirement, as only minimal or null changes are required for implementing this system.

2. LITERATURE SURVEY

2.1 KYC Verification Using Blockchain:

https://www.ijraset.com/research-paper/kyc-verification-usingblockchain#:~:text=Implementing%20a%20blockchain%20application%20for,document %20while%20also%20providing%20security.

The Know Your Customer process that exists today is inefficient and inconvenient for both banks and customers. The procedure is unnecessary and increases operating expenses. Furthermore, it offers little to no privacy protection to users. A blockchain-based method is proposed in this paper. Because documents are maintained by a centralised organisation, verifying KYC documents for multiple financial sectors is a time-consuming and insecure process. The proposed KYC system is a Blockchain-

ISSN: 2366-1313

based de-centralised system that can be used to establish proof of identity for an individual person. It is also a cost-effective method, and the data stored on the decentralised application provides an additional layer of security.

2.2 Know Your Customer (KYC) Process through Blockchain:

https://www.irjet.net/archives/V7/i6/IRJET-V7I6441.pdf The sustaining problem in banking industry is KYC management process. This is monotonous process as it involves the same process to be done for different institutions for a customer thereby increasing the cost. The process is also time consuming for customers as the same process takes place for each bank or bank with which they intend to work. The personal experience of many people revealed that this process should be made simple. In this paper we are intended to do this. We propose a solution based on Blockchain technology, which reduce the traditional KYC verification process cost. The Major addition to it is that the whole verification process is conducted only once for each customer, irrespective of the number of institutions they register and thereby increasing the transparency by securely sharing the results through DLT. This approach involves proof of concept (POC) with ethereum. This process reduces cost overhead, improved customer experience and increases transparency.

2.3 A Blockchain Based Approach For An Efficient Secure KYC Process With Data Sovereignty:

https://www.ijstr.org/final-print/jan2020/A-Blockchain-Based-Approach-For-An-EfficientSecure-Kyc-Process-With-Data-Sovereignty.pdf The Know Your Customer process followed by the banking institutions today is highly inefficient and inconvenient for both banks and the customers. The process is redundant and increases operational costs. Moreover, it has little to no safeguards for user's privacy. This paper proposes a blockchain based approach to de-centralise the storage of personal data and remove the need to trust a third party. Additionally, our proposed solution focuses on the problem of data ownership which we solve by storing it in an encrypted format which can only be decrypted by the user. In our implementation, the user has his PII (Personally Identifiable Information) on a QR code in an encrypted format, ensuring two-layer security of data. The banks only have access to the data when the customer explicitly gives it to them. Consequently,

ISSN: 2366-1313

implementing the proposed system along with the coordination between the banks, the regulator and other stakeholders will ensure an enhanced user experience and save costs for the service providers.

2.4 KYC using Blockchain:

https://www.ijtsrd.com/computer-science/other/31542/kyc-using-blockchain/sreelakshmi-v-g Nowadays everyone uses their personal identification documents on a regular basis, which gets shared with third-parties without their explicit consent and stored at an unknown location. Companies such as government institutions, banks, credit agencies and other financial organizations are considered to be the weakest point in the current identity management system as they are unfortified to theft and hacking of data. Although the financial services sector have been seeking solutions for identity problem for a long time, it is only now that a viable solution has arrived in form of blockchain. KYC (Know Your Customer) using Blockchain eliminates the repeated KYC checks that banks currently perform by maintaining a common secure database in a blockchain. The nature of a blockchain ensures that unauthorized changes to the data are automatically invalidated. The proof of reputation concept makes the verification process more robust and secure. Decentralized computing architecture, blockchain will allow for the 8 accumulation of data from multiple authoritative service provider into a single immutable, cryptographically secured and validated database. Blockchain KYC solution take advantages of a secure, public digital ledger to give almost instantaneous and truly secure verification of identity. Due to the immutable and unalterable nature of the record kept in the blockchain, fraud could become a thing of the past.

2.5 Transforming the Know Your Customer (KYC) Process using Blockchain:

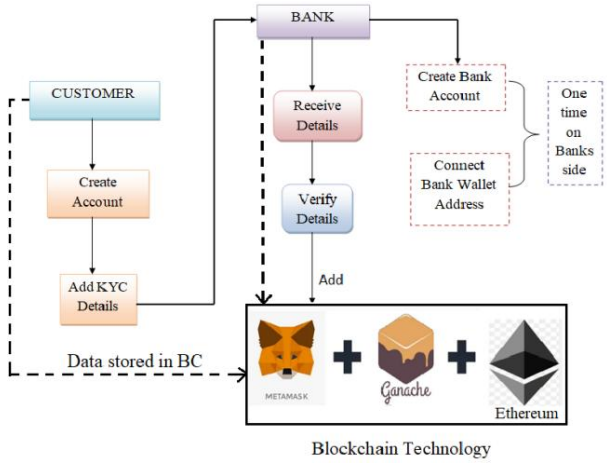
https://ieeexplore.ieee.org/abstract/document/9036811 A major yet trivial problem in the banking industry right now is how tedious and costly the traditional Know-Your-Customer (KYC) process is. The process is also tiresome for customers as they need to undergo the same process for each bank or financial institution with which they intend to work. Personal experiences of people dictate the cumbersome nature of the process, thereby demanding an efficacious alternative. Through this paper, we intend to do exactly that. We propose a new solution

ISSN: 2366-1313

based on Distributed Ledger Technology or Blockchain technology, which will reduce the traditional KYC verification process cost for Institutions and cut short the general time line of the completion of the process while making it smoother for the customers. Major enhancement in our solution over the conventional methods is that the whole verification process is conducted only once for each customer, irrespective of number of institutions he or she wishes to be linked to. Also, since we are using the DLT, verification results can be securely shared with the customers thereby increasing transparency. Following this approach, we developed a Proof of Concept (POC) with the Ethereum API, websites as endpoints and an android app as front office; realising the feasibility and effectiveness of this approach. All in all, this approach improves customer experience, reduces cost overheads, and increases transparency in the process of onboarding a customer.

3. SYSTEM DESIGN

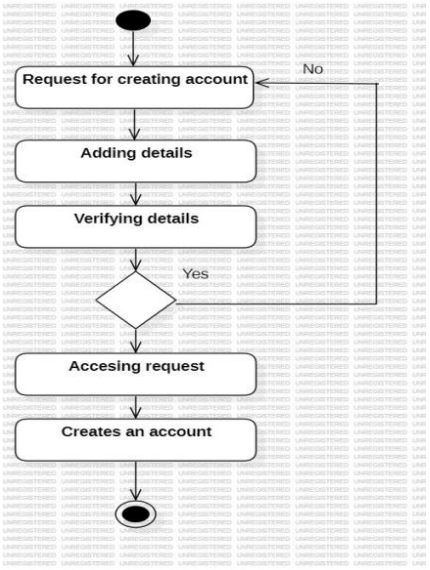
3.1 SYSTEM ARCHITECTURE:



Blockchain Technology

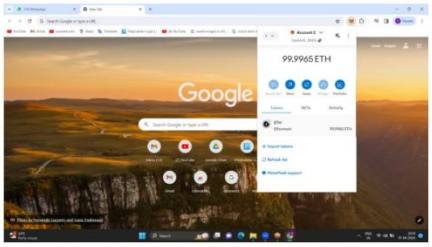
Activity diagram:

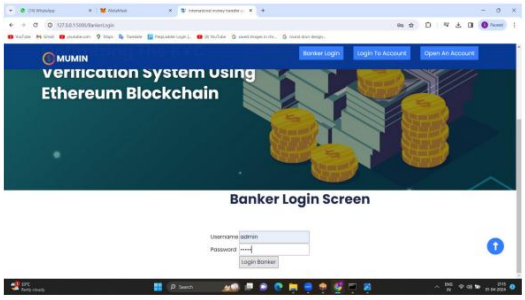
The process flows in the system are captured in the activity diagram. Similar to a state diagram, an activity diagram also consists of activities, actions, transitions, initial and final states, and guard conditions.

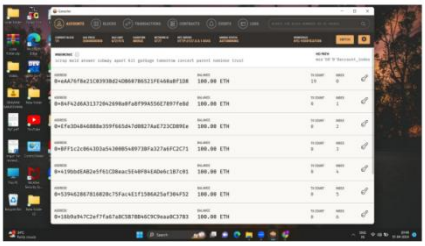


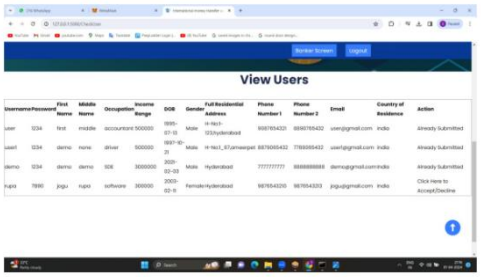
4 .OUTPUT SCREENSHOTS

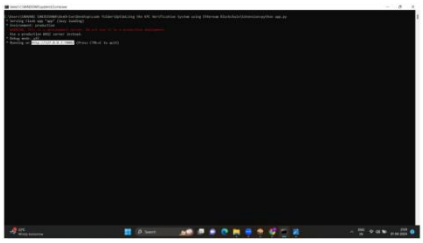
ISSN: 2366-1313

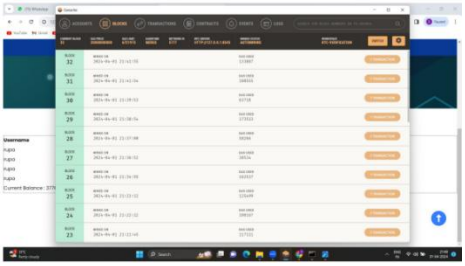


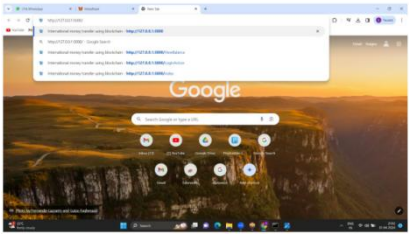


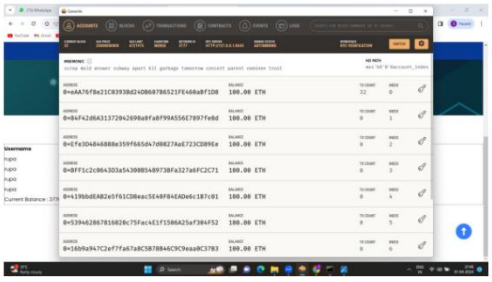


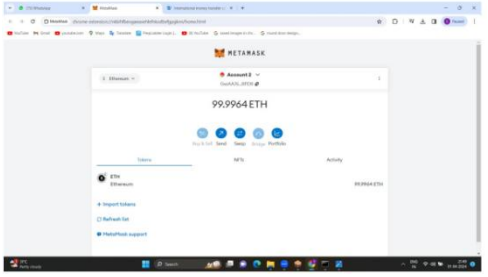


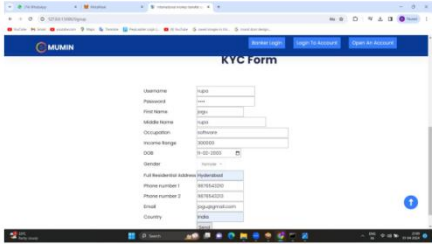












5. CONCLUSION

In this work, We have analyzed the merits and the drawbacks of the previously implemented systems and its benefits. The results of our review showed the shortcomings of the traditional KYC system and the demand for a better architecture that is secure and safe from the current redundancies. We have found the implementation of blockchain technology for such a system to be appropriate and feasible. The nature of blockchain is immutable and decentralized which is exactly the requirement for the desired system. The majority of the review studies show that blockchain is the necessary technology to improve the finance sector not only limited to the KYC process. The issues in the current KYC process is greatly apparent when compared to the similar systems that use blockchain. Overall blockchain is one of the most promising technologies for KYC process and required to create the system that eliminates the inconsistencies of the current system.

6. REFERENCES

[1] S. N V, "KYC Verification Using Blockchain", International Journal for Research in Applied Science and Engineering Technology, vol. 10, no. 7, pp. 861- 865, Jul. 2022.

[2] E. S. V. Reddy, N. Suhag and M. S, "Know Your Customer (KYC) Process through Blockchain", International Research Journal of Engineering and Technology (IRJET), vol. 7, no. 6, pp. 2336-2339, 2020.

[3] Manoj Kumar and Nikhil Yadav, "A Blockchain Based Approach For An Efficient Secure KYC Process With Data Sovereignty", International Journal for Research in Applied Science and Engineering Technology, vol. 9, no. 1, pp. 3403- 3407, 2020.

[4] V. G. Sreelakshmi, P. M. Meera, M. P. Senna, J. Mathews and B. S. Swapna, "KYC using Blockchain", International Journal of Trend in Scientific Research and Development (IJTSRD), vol. 4, no. 4, pp. 1600-1603, 2020.

[5] P. Yadav and R. Chandak, "Transforming the Know Your Customer (KYC) Process using Blockchain", 2019 International Conference on Advances in Computing Communication and Control (ICAC3), December 2019.

[6] Wenger, A. 2014, “Bitcoin: Clarifying the Foundational Innovation of the Blockchain.” Continuations [Online].

Available: https://continuations.com/post/105272022635/bitcoin-clarifyingthefoundationalinnovation-of 50

[7] Nakamoto Satoshi, "Bitcoin: A Peer-to-Peer Electronic Cash System." October 2008.

[8] Reddy, E. S. V., N. Suhag, and M. S., "Know Your Customer (KYC) Process through Blockchain." International Research Journal of Engineering and Technology (IRJET) 7, no. 6 (2020): 2336-2339.

[9] Manoj Kumar and Nikhil Yadav, "A Blockchain Based Approach For An Efficient Secure KYC Process With Data Sovereignty," International Journal for Research in Applied Science and Engineering Technology 9, no. 1 (2020): 3403- 3407.

[10] Yadav, P., and R. Chandak, "Transforming the Know Your Customer (KYC) Process using Blockchain." 2019 International Conference on Advances in Computing, Communication and Control (ICAC3), December 2019, doi: 10.1109/icac347590.2019.9036811