

Decentralized Know Your Customer System Using Blockchain

Prof. Pravin Patil, Radhika Shirke, Samruddhi Wankhede, Samarth Mahajan, Samruddhi Chandras

*¹ Professor, Department of Computer Engineering, Zeal College of Engineering, Pune, Maharashtra, India

² Student, Department of Computer Engineering, Zeal College of Engineering, Pune, Maharashtra, India

³ Student, Department of Computer Engineering, Zeal College of Engineering, Pune, Maharashtra, India

⁴ Student, Department of Computer Engineering, Zeal College of Engineering, Pune, Maharashtra, India

⁵ Student, Department of Computer Engineering, Zeal College of Engineering, Pune, Maharashtra, India

ABSTRACT: Know your customer (KYC) is used in government organizations and by all financial service providers. We are currently dealing with a time-consuming and costly KYC process, and each organization has its own KYC. So, in order to eliminate the traditional process and ensure the KYC process is secure and efficient, we adopt Blockchain Technology to replace the present manual process. The proposed decentralized KYC system based on the blockchain can be applied at multiple locations to validate the customer's identity, which is a prerequisite in today's world. To establish trust between stakeholders, the current system ensures that the data stored is tamper-proof with no indulgence of the third party. In terms of gas used to deploy smart contracts on the blockchain, the decentralized KYC system is less expensive than the manual process. Even if the decentralized database is compromised, tampering with the data is harmless because it is encrypted with an additional layer of security.

KEYWORDS: Decentralized KYC, smart contract, blockchain

I.

INTRODUCTION

Decentralized Know Your Customer (DKYC). DKYC leverages the power of blockchain technology to revolutionize the way identity verification and customer due diligence are conducted in the financial ecosystem. Unlike conventional KYC systems, which rely on centralized databases vulnerable to data breaches, DKYC introduces a decentralized and secure framework.

At its core, DKYC establishes a distributed ledger, or blockchain, that enables the secure and transparent sharing of customer information among trusted entities, such as banks, financial institutions, and regulatory bodies. This decentralized approach offers several advantages, including enhanced data security, streamlined onboarding processes, and improved customer privacy. In a DKYC system, customers have greater control over their personal data. They can securely store their verified information on the blockchain and selectively grant access to trusted entities. This empowers individuals to maintain ownership of their data and reduces the risk of unauthorized access or misuse.

II.

LITERATURE SURVEY

[1] SOMCHART FUGKEAW, "Enabling Trust and Privacy-Preserving e-KYC System Using Blockchain

This paper describes decentralized know your customer (e-KYC) which is a system for the banking or identity provider to establish a customer identity data verification process between relying parties.

[2] SHIVAM CHAUBEY, "AutoKYC: Automation of Identity establishment and authentication in KYC process using Text extraction and face recognition".

AutoKYC is a system designed for the organization who wants to verify the identity of the users while doing their KYC for example, a bank.

[3] ANDREA GIACOBINO, "Cosmos Cash: Public Permissionless approach towards SSI and Use Cases"

In the digital world, digital identity is essential as it represents users in the same way that physical identity represents people in the physical world.

III.

SYSTEM ARCHITECTURE

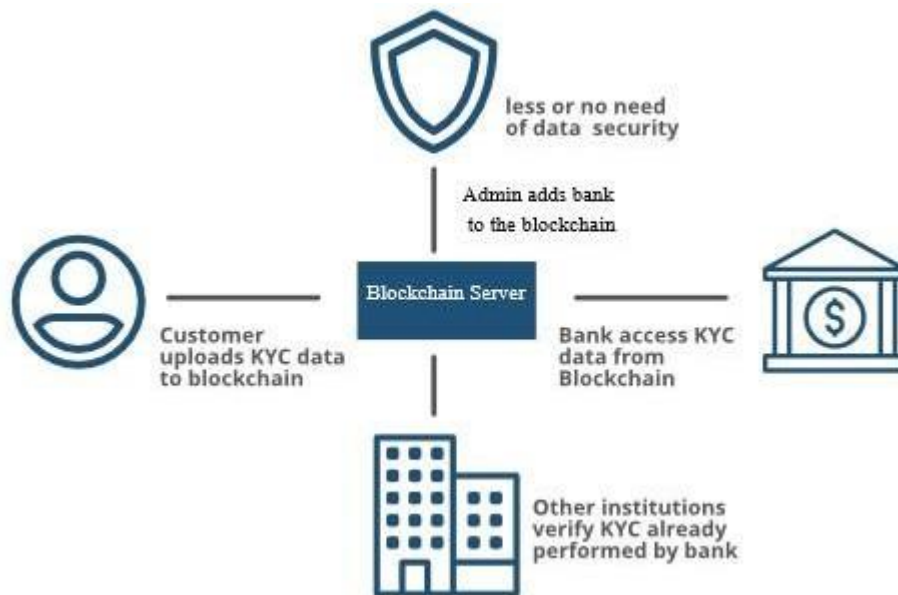


Figure 1: DKYC System Architecture

IV. STAKEHOLDERS IN KYC PROCESS

a) Admin:

Admin is one of the most important stakeholders in the KYC process. Admin is defined as the entity which is responsible for adding financial institutions or banks in the blockchain. It's the apex body in the KYC process. As an Admin, one must understand the significance of the DKYC system. It ensured that customers' personal information and financial data remained secure while providing seamless verification processes across different banks. It was a powerful tool that eliminated the need for redundant paperwork and improved the efficiency of customer onboarding.

Admin's first step is to assess the eligibility of each bank that applied. He would carefully analyze their credentials, including licenses, compliance records, and overall reputation. It was crucial to ensure that only reputable banks with a proven track record were added to the DKYC system. Once he confirmed the bank's eligibility, Admin would initiate a series of thorough background checks. He would dig into their anti-money laundering measures, customer due diligence processes, and risk management frameworks. Admin understood that a strong foundation of security measures was vital to safeguard the system and protect its users. After completing the due diligence process, Admin would conduct extensive discussions and negotiations with the bank's management. He would explain the benefits of joining the DKYC system, emphasizing the enhanced customer experience, reduced paperwork, and increased trustworthiness.

Admin's persuasive skills and deep knowledge of the system were instrumental in convincing banks to embrace this innovative solution. Once the negotiations were successful, Admin would collaborate with the technical team to integrate the new bank seamlessly into the DKYC blockchain-based system. He would oversee the implementation process, ensuring that the bank's systems were synchronized with the DKYC infrastructure.

b) Banks or Financial Institutions

In the world of finance, banks and financial institutions play a vital role in facilitating transactions and providing essential financial services. With the advent of blockchain technology, a revolutionary approach has been introduced to enhance the security and efficiency of these institutions through a decentralized know your customer (DKYC) system.

Integration of banks and financial institutions into the blockchain-based DKYC system represents a significant leap forward in the evolution of the financial industry. By leveraging the power of blockchain technology, these institutions can enhance security, improve efficiency, and foster greater trust among customers. The DKYC system paves the way for a more transparent, secure, and inclusive financial ecosystem, benefiting both the institutions and the customers they serve.

Firstly, it allows for seamless verification processes, enabling faster customer onboarding and reducing the time-consuming manual verification procedures. This enhances the overall customer experience, making it more convenient and efficient. Secondly, the DKYC system improves the security of customer data.

c) Customers

Customers play a crucial role in ensuring the effectiveness and security of the process. These systems empower customers with greater control over their personal information while streamlining the verification and onboarding procedures.

One of the primary functions of customers in a blockchain-based DKYC system is the provision of their personal information. Customers are responsible for submitting their identification documents, financial records, and other relevant details to initiate the verification process. By providing accurate and up-to-date information, customers enable banks and financial institutions to conduct the necessary due diligence and establish their identity securely.

Customers also benefit from the blockchain-based DKYC system by gaining greater control over their data. They are responsible for promptly updating their information whenever there are changes or updates. Once a customer's information is verified and stored on the blockchain, it can be securely shared with other trusted entities, enabling faster and more efficient access to various financial services.

Additionally, customers have the right to consent and control the usage of their data. In conclusion, customers play a vital role in the blockchain-based DKYC system. By providing accurate information, maintaining the integrity of their data, and controlling the usage of their personal information, customers contribute to the effectiveness, security, and efficiency of the system.

V. IMPLEMENTATION

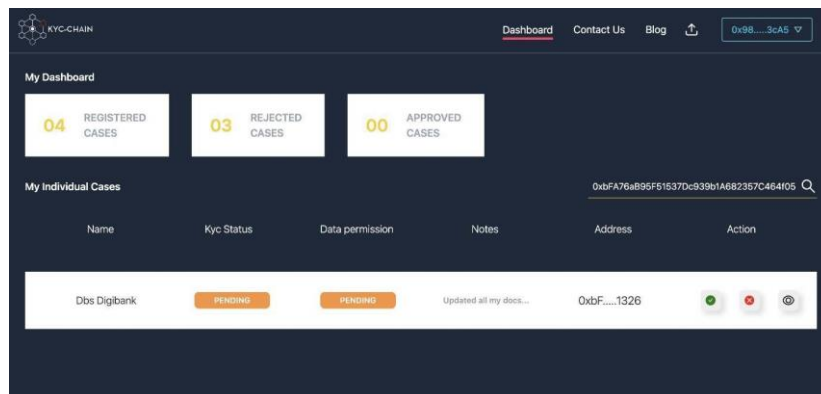


Figure 2: Admin's Dashboard

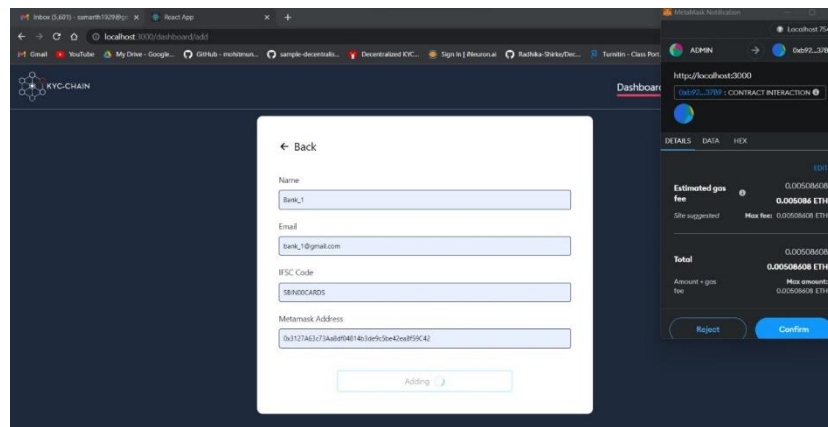


Figure 3: Adding Bank in Blockchain

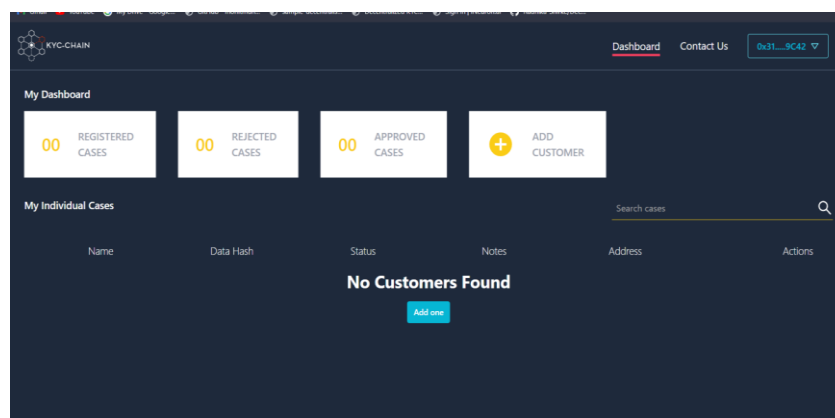


Figure 4: Bank's Dashboard

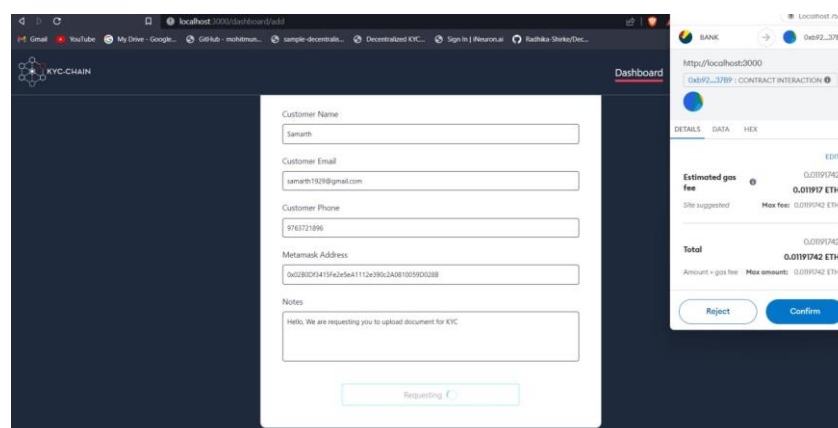


Figure 5: Adding Customer

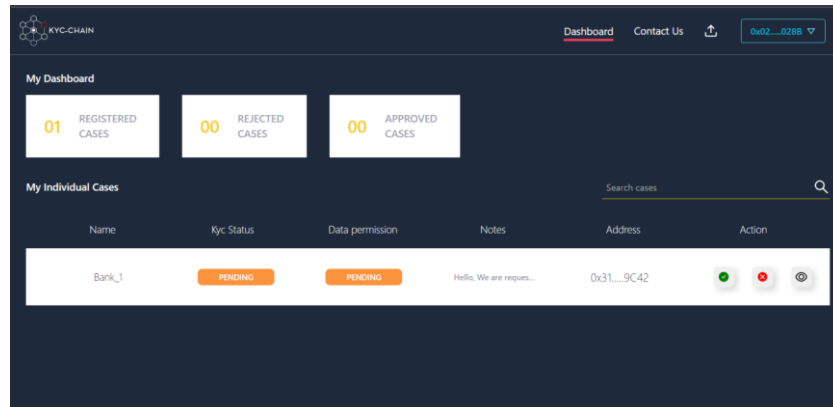


Figure 7: Customer's Dashboard

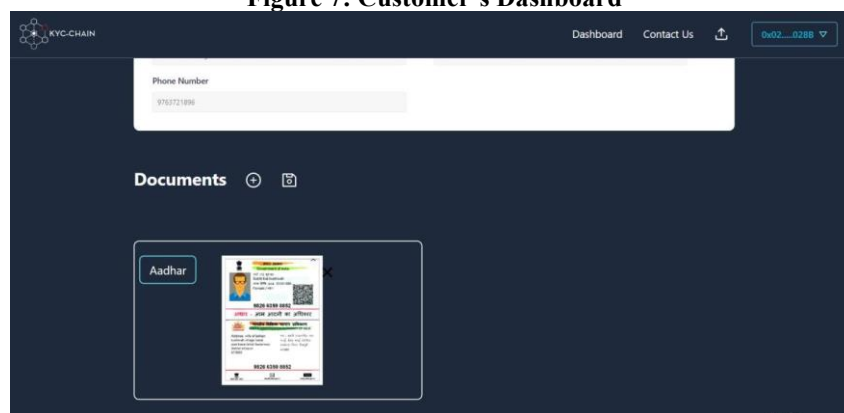


Figure 8: Customer Uploading government authorized documents

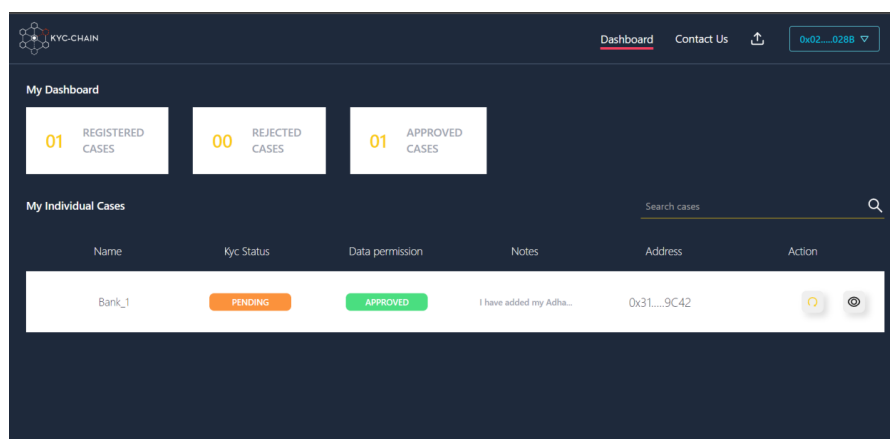


Figure 9: Customer accepted the Bank's request for document verification.

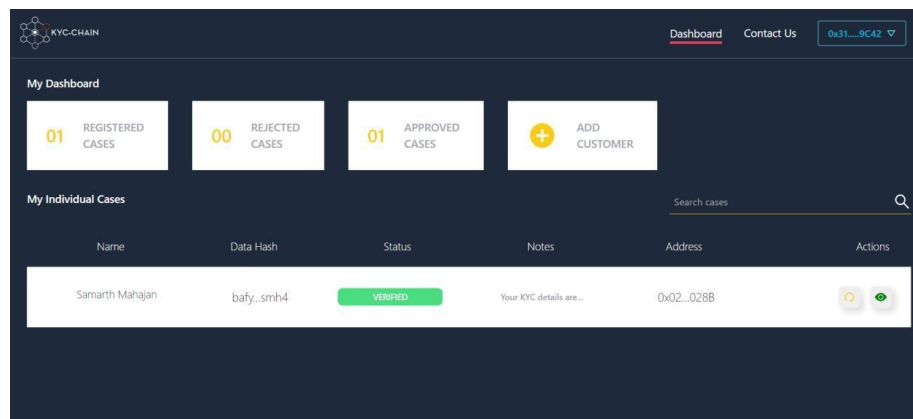


Figure 10: Documents Uploaded by Customer are verified

CONCLUSION

By using very few resources to monitor and analyze user behavior for anomalies, KYC chains shorten the time it takes to process and gather information. The time and money saved can then be put toward solving more difficult KYC problems. When combined with other technologies like AI, the KYC chain has the potential to significantly reduce the time and cost associated with the KYC process for institutions.

VI. REFERENCES

- [1]. SOMCHART FUGKEAW, "Enabling Trust and Privacy-Preserving e-KYC System Using Blockchain", Apr. 2022
- [2]. Y. Zhong, M. Zhou, J. Li, J. Chen, Y. Liu, Y. Zhao, and M. Hu, "Distributed blockchain-based authentication and authorization protocol for smart grid," *Wireless Commun. Mobile Comput.*, vol. 2021, pp. 1–15, Apr. 2021, doi: 10.1155/2021/5560621.
- [3]. S. Y. Lim, P. T. Fotsing, A. Almasri, O. Musa, M. L. M. Kiah, T. F. Ang, and R. Ismail, "Blockchain technology the identity management and authentication service disruptor: A survey," *Int. J. Adv. Sci. Eng. Inf. Tech.*, vol. 8, pp. 1735–1745, Sep. 2018.
- [4]. A. A. Mamun, A. Al Mamun, S. R. Hasan, S. R. Hasan, M. S. Bhuiyan, M. S. Bhuiyan, M. S. Kaiser, M. S. Kaiser, M. A. Yousuf, and M. A. Yousuf, "Secure and transparent KYC for banking system using IPFS and blockchain technology," in *Proc. IEEE Region Symp. (TENSYP)*, Jun. 2020, pp. 348–351.
- [5]. M. Pic, G. Mahfoudi, and A. Trabelsi, "Remote KYC: Attacks and countermeasures," in *Proc. Eur. Intell. Secur. Informat. Conf. (EISIC)*, Nov. 2019, pp. 126–129.
- [6]. W. Shbair, M. Steichen, and J. François, "Blockchain orchestration and experimentation framework: A case study of KYC," in *Proc. 1st IEEE/IFIP Int. Workshop Manag. Managed Blockchain (Man Block)*, Jeju Island, South Korea, Aug. 2018, pp. 23–25.
- [7]. R. Norvill, M. Steichen, W. M. Shbair, and R. State, "Demo: Blockchain for the simplification and automation of KYC result sharing," in *Proc. IEEE Int. Conf. Blockchain Cryptocurrency (ICBC)*, May 2019, pp. 9–10, doi: 10.1109/BLOC.2019.8751480.
- [8]. T. Mikula and R. H. Jacobsen, "Identity and access management with blockchain in electronic healthcare records," in *Proc. 21st Euromicro Conf. Digit. Syst. Design (DSD)*, Prague, Czech Republic, Aug. 2018, pp. 699–706.
- [9]. Prof. Pravin Patil, Samarth Mahajan, Radhika Shirke, Samruddhi Wankhede, Samruddhi Chandras, "Blockchain-Based Decentralized Know Your Customer (DKYC)", DOI: 10.15680/IJIRCCE.2023.1104179 April 2023.