

GOVERNMENT TENDER FILTERING AND MANAGEMENT SYSTEM FOR COMPANY USING BLOCKCHAIN

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ABSTRACT

Generally, the Tenders or contracts are used by governments and companies to procure goods or services. In the case of defective processes, improper tender management results in significant losses. Contractors are favoured, records aren't kept properly, there's a lack of openness, there's hacking, data is changed, and so on. To overcome this problem, we have used a simple and secure block chain technology and to secure by encryption coupled with indisputable block-based architecture for transaction management. In this case we make use of block chain technology to secure transaction-based documents along with transactions such as to provide a completely transparent tendering process, tender documents, applications, bid proposals, company profiles, past records, approving officer details, and rejection details are all required.

Keywords: Block chain, Tenders, Bidders, Contractors.

I. INTRODUCTION

Current e-tendering processes aren't 'fair and open,' which means that information isn't shared with all parties involved. When a corporation is chosen as the winner of a contract, for example, the information is disseminated 'as they wish. Organisations that bid on a same tender aren't told why their proposal was rejected or why one company was chosen as the winner. A corporation can request this information, but obtaining it is a time-consuming process. Despite the fact that checking these papers is possible, reviewing them takes time. A side from not being transparent, the security of these portals is a major worry, as it can lead to fraud and data manipulation in a central database. If a hacker acquires access to this central database, bids can be shared with competitors, resulting in severe financial and strategic losses for a corporation. Blockchain technology may be used to address these security problems since it focuses largely on information decentralisation and is safeguarded by encryption combined with an irrefutable block-based architecture for transaction management. As a consequence, Blockchain and Smart Contracts may be used to construct a transparent, decentralised, and secure tendering framework that allows bidders to keep track of portal functionality and all tender portal activity.

II. METHODOLOGY

- 1. Tender Officer:** Tender officer will login into the account after registration and update the notification regarding the tender process. There is a option where they can modify or delete the notification part. Now the officer will download the tender files for which were register by the bidders and decrypt the data from downloaded files to get the information of bidders. Once after getting the information of bidders a confirmation mail sent to the bidders as the acceptance for their tender applications.
- 2. Bidder:** Bidders will login into the account after registration and they will view the tender notifications. If the bidder is okay with tender description he/she will provide their information in text file to the bidder officer. After sending the application they can check the response from the tender officer can make a tender to the tender officer by providing data in a text file.
- 3. Blockchain:** The blockchain is used to store an encrypted format by dividing the data into chunks. Here apply the hash code on chunks for hiding the data after converting it into an encrypted format which is stored in a database.

The Proposed Tender Management System uses block chain technology to ensure the complete tender management process is secure and efficient. A block chain is secured by encryption coupled with indisputable

block-based architecture for transaction management. This enables the system to maintain a basic, transparent transaction with only the information that the system needs to know.

III. PROBLEM DEFINATION

The traditional tender management process in various industries and sectors is plagued with inefficiencies, lack of transparency, and susceptibility to fraud and manipulation. The existing systems often result in delayed decision-making and increased costs for both the issuing authority and the bidders. To address these challenges, there is a need to develop a Tender Management and Filtering System using blockchain technology. This system will aim to enhance transparency, security, and efficiency in the tendering process.

Problems of Existing System:

- 1. Lack of Transparency:** Current tender management systems often lack transparency, making it difficult for all stakeholders to track the status and progress of tenders. This lack of transparency can lead to suspicions of favoritism and corruption.
- 2. Data Manipulation and Fraud:** The centralized nature of traditional tender systems makes them vulnerable to data manipulation and fraud. Bidders or even internal staff may tamper with data, leading to unfair competition and potential financial losses for organizations.
- 3. Manual and Time-Consuming Processes:** Traditional tender processes involve significant manual efforts for tender submission, evaluation, and approval. This manual work not only prolongs the decision-making process but also increases the likelihood of errors.
- 4. Inefficient Communication:** Communication between stakeholders, including government bodies, organizations, and contractors, is often fragmented and relies on outdated methods such as email and physical documentation. This inefficiency can lead to misunderstandings and delays.
- 5. Security Concerns:** Sensitive information, such as contractor details, project specifications, and financial data, is at risk of data breaches or unauthorized access. Protecting this data is a top priority.

IV. PROPOSED SYSTEM

The system is built on a blockchain platform, ensuring the following benefits:

- **Data Immutability:** All tender-related data is recorded on the blockchain, making it tamper-proof.
- **Transparency:** Stakeholders can access a public ledger of tenders, enhancing transparency.
- **Smart Contracts:** Smart contracts are used to automate filtering, approval, and rejection of tenders.
- **Security:** Data is encrypted and stored on a decentralized network, making it highly secure.

The system comprises the following key components:

- **User Interface:** Provides stakeholders with a user-friendly platform to interact with the system.
- **Blockchain Network:** Utilizes a permissioned blockchain network for secure data storage and secure Transactions.
- **Smart Contracts:** Automate tender evaluation, filtering, and approval/rejection processes.
- **Database:** Stores non-sensitive data for reference and analytics.

System Design:

1. Tender Submission:

- Contractors submit their tenders through the user interface.
- The system records tender details on the blockchain.

2. Filtering:

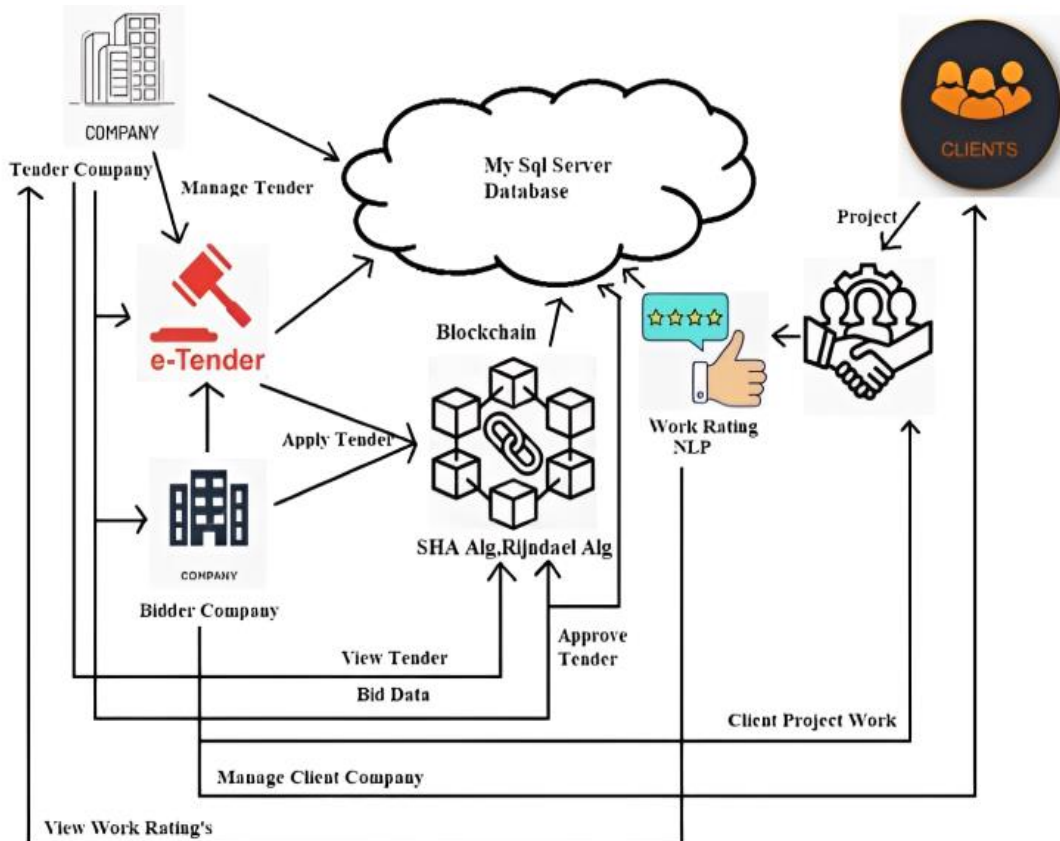
- Smart contracts automatically assess tender submissions based on predefined criteria.
- Approved tenders are forwarded for further evaluation.
- Rejected tenders are recorded on the blockchain with reasons for rejection.

3. Evaluation:

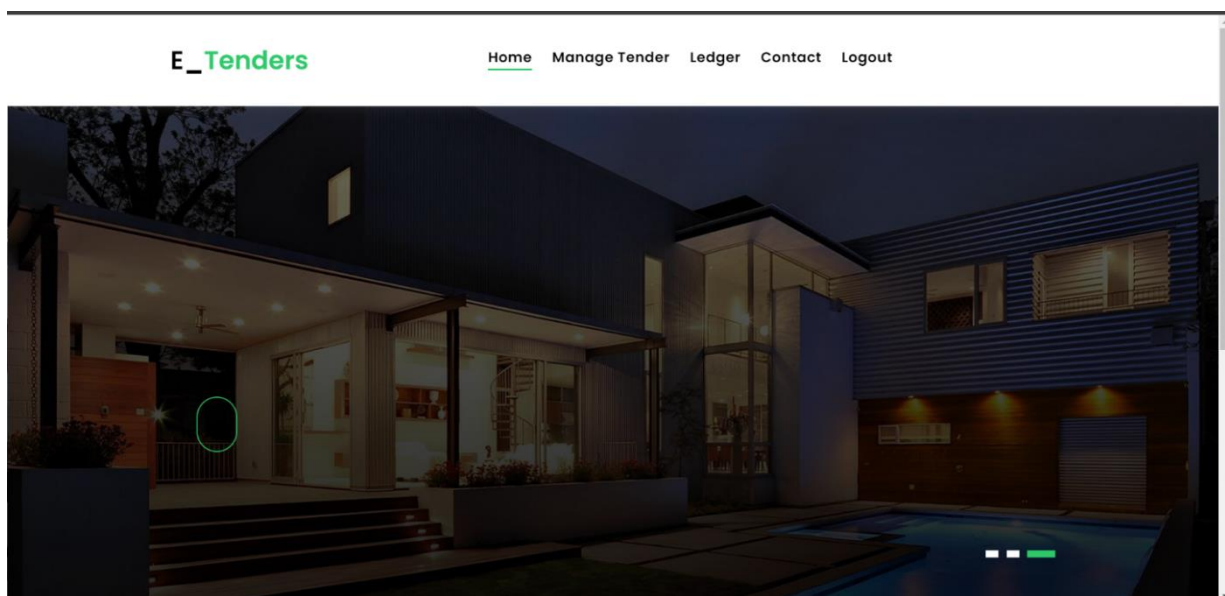
- Evaluation committee members access the system to assess approved tenders.
- All interactions and scoring are recorded on the blockchain for transparency.

4. Approval/Rejection:

- Smart contracts automatically calculate the scores and determine the winning tender.
- The chosen tender is approved and recorded on the blockchain.
- Rejected tenders are also recorded on the blockchain.



V. RESULTS



E_Tenders

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View Bidder Request!

Bidder Requests

ID	Bidder Name	Tender Name	amount	Date	Request Status
1003	Gaurav	URAN EXPRESS WAY	10000000	16-04-2024 02:12:41 PM	Pending Accept



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Add new Tenders

Tender List

Add New Tender

Id	Name	Road	Renders	Reference No	Location	Closing Date	Edit	View	Delete
1002	URAN EXPRESS WAY	CONCRETE ROAD	ROAD CONSTRUCTION	1234	DELHI	28-04-2024 12:00:00 AM	Edit	View	Del

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1004	3	e/yWfQSnDsunnhm3Mnt0M2IHnzDkERCpL48rgMhaVd3Y=	Registration	16-04-2024 12:00:00 AM	View
1005	3	kjAlqdB8yAsxGWotBIV4XzbK9/19PB/+5dOoHQooaQnY=	Requested	16-04-2024 12:00:00 AM	View
1006	1006	lVtv/uvaOCSWopaW6hUgn7IelflVG/4QMzi72al.VSys=	completed	16-04-2024 12:00:00 AM	View
2002	4	6/7ICTwInbS9O2On4+qBV9/wz3pu0V/9HLwl/cgTKS0I=	Registration	16-04-2024 12:00:00 AM	View
2003	1001	79lQhikAqWEn9kVHqFz3soLakraBsk/NBBTO2asoY0E=	Requested	16-04-2024 12:00:00 AM	View
2004	1001	2uS9CxYAsl.9Kwll.ZrxDdF+3pki8EravMDhd4aOwSO0=	Requested	16-04-2024 12:00:00 AM	View
2005	2005	fHTI7Rf32nalrmvO8RIHIItZoEsrCNxUWIZdZb4i3NSg=	completed	16-04-2024 12:00:00 AM	View
2006	0	D8OB6P2urRm2L2nVPmsloMyjSdAnLzx4X//iEEGuIU8=	Registration	16-04-2024 12:00:00 AM	View

E_Tenders

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Bidder History

ID	Bidder name	Amount	Status
1003	Gaurav	10000000	Accepted

VI. FUTURE SCOPE

In the future, the system can be expanded to include additional features such as supplier reputation management, integration with payment systems, and AI-powered document analysis for further automation. Regular updates and maintenance will ensure its continued success and adaptability to evolving requirements. Here are some potential future developments and opportunities for such a system:

1. Integration with IoT and AI:

Integration with the Internet of Things (IoT) devices and Artificial Intelligence (AI) can provide real-time data for monitoring and managing tender-related activities. IoT sensors can track the progress of construction projects, while AI can assist in the automated evaluation of tenders.

2. Supply Chain Integration:

Extending the blockchain-based system to include supply chain management can enhance transparency and traceability of materials and goods used in projects, reducing the risk of substandard or counterfeit items.

3. Interoperability:

Future systems can focus on ensuring interoperability with other blockchain networks, allowing for cross-organization or cross-border tendering processes while maintaining data integrity and security.

4. Tokenization of Tenders:

Tokenization of tender submissions and project assets can enable more efficient and secure fund management, allowing for automatic disbursement of payments as milestones are met.

5. Digital Identity and KYC Verification:

Integration with digital identity solutions can streamline Know Your Customer (KYC) and authentication processes, ensuring that participants are legitimate and reducing the risk of fraud.

VII. CONCLUSION

A user-friendly environment for the tender management process was effectively developed by our tender management system. This project is adaptable, and adjustments are simple to make. Further adjustment is simple if necessary in the near future. Since time is of the essence, it is much more efficient to do the majority of tasks online, with only a small number of extremely crucial tasks being completed offline for verification. As a result, it might result in higher profitability and better corporate quality. It assists in quickly and inexpensively allocating projects and tenders to contractors in an orderly, optimal manner[2]. When it comes to applications such as tender portals, where transparency and security are of foremost importance, traditional technologies and design patterns cannot be used as they put a threat to these requirements. As discussed earlier, there are many security requirements for a tendering framework that cannot be solved just by using a centralized tender portal for creating and bidding on the contracts[4].

VIII. REFERENCES

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