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Blockchain Based E-Tendering System

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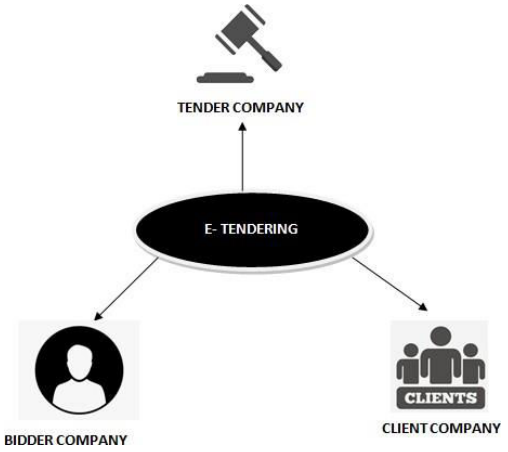
***Abstract*- In the field of E-Procurement and other sectors bidding leads to a new trend of development, convenience and efficiency and other significant advantages effectively promote the reform and innovation in the bidding field. Nowadays, most Bidding systems require strong data protection and prevent third-party access. However, with the emergence of Blockchain technology and the rise of data protection. This paper introduces organizational structure E-Tendering system based on Blockchain. This system uses Blockchain to replace the traditional database. In data encryption, privacy protection uses the AES Rijndael and SHA algorithm which improves the anonymity of participants, the privacy of data transmission, and verifiable data. Compare with other E-Procurement, this system is more secured, efficient, and transparent, which completely protects the bidding information in the bidding process. Our project is implemented using Blockchain technology, Tender Company,Bidder Company, and Client Company are linked directly with each other. Bidding Process and transactions among them are Secured by SHA , AES Rinjdael algorithm.**

Keywords—Blockchain, Bidding, SHA, AES Rinjdael

I. INTRODUCTION

Current E-Tendering systems are not fair and transparent meaning that the information is not shared with all stakeholders. The information is released on an 'as they please' basis example - when a company is selected as a winner of a contract, other companies that bid on the same bid are not notified that why their bid was rejected and why that particular company was selected as a winner. A Bidder company can request this information but it is a sluggish process of getting this data. Even though evaluating these documents is possible it needs time. Apart from not being fair and transparent, security also plays a major issue for this application leading to fraud and manipulation of bidder data stored in a database.

If a hacker gets hold of this database, bids can be leaked to competitor's leads to huge financial and strategic losses for a business. Blockchain technology can be used to solve these Blockchain applications will solve these problems by solving the traceability of each product. Security plays an important role here because as it heavily focuses on the decentralization of data and is secured by encryption integrated with undeniable block-based architecture for transaction management. Hence, Blockchain is often used as a transparent, decentralized, and secured tendering framework which can facilitate bidders' oversight on portal functions and observe all the activities administered by the tender portal.



II. LITERATURE SURVEY

Blockchain Technology and its Techniques

Blockchain is based on the concept of decentralization. Hence it is also known as a distributed database. In this case, the concept of full replication employs the distributed database i.e. each node has a full copy of a Blockchain. Whenever the Blockchain needs to be updated because of a transaction, a process called mining takes place. A block consists of many transactions. A consequences protocol is

Employed and therefore the mined block is broadcasted to all or any other nodes. These blocks will have a cryptographic hash value in the header related to the previous block in the Blockchain. If a block is manipulated then the hash value associated with this block changes and as a result, all the proceeding blocks should be re-mined which is not possible. In this way, Blockchain employs the property of immutability.

BLOCKCHAIN-BASED E-TENDERING SYSTEM BY DHAWAL MALI AND DIVYA MOGAVEERA

Dhawal Mali and Divya Mogaveera proposed a system called a Blockchain-based e-Tendering System. In this paper, how smart contracts (based on ethereum Blockchain) are often employed to style a distributed e-tendering system is explored. Several algorithms are used to implement each process. The security and audibility challenges are evaluated compared to this tendering process.Blockchain and Smart Contract here are used as decentralized and secured tendering frameworks that can facilitate bidders' oversight on portal functions and observe the activities carried out by the tender portal. In this paper, a System is designed by mentioning various processes involved, and their basic implementation and gas requirements of the tender smart contract are discussed.

A SECURE E-TENDERING SYSTEM BY SHAHRIYAR MOHAMMADI AND HEDIY JAHANSHAHI

Shahriyar Mohammadi and Hediy Jahanshahi Proposed System "A secure E-Tendering system" In this paper First, a general framework for legal and security requirements for a typical e-tendering system has been identified. Development and implementation for an electronic tendering system and security issues related to each stage are processed. Three kinds of E-tendering architectures are discussed-Tendering architecture uses biometrics for accurate authentication, Shamir threshold cryptosystem, and Bell-LaPadula security Model for efficient access control to the E-tender Box are introduced. This project uses an encrypted iris pattern as a biometric attribute for authentication of tenderers participating in a tender. The private information of the bidders is protected and only the credit debit card agency has access to it. So here credit debit card issuing bank is responsible for authentication. This threshold system is used for securing the e-tender box.

AN EFFICIENT APPROACH FOR TENDERING BY INTRODUCING BLOCKCHAIN TO TAKE CARE OF SECURITY AND RELIABILITY BY AJEENKKYA AMBEGAONKER AND UTKARSH GAUTAM

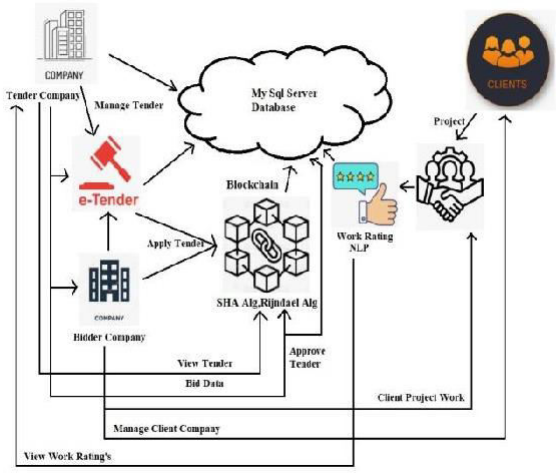
Ajeenkkya Ambegaonker and Utkarsh Gautam published the concept "Efficient approach for Tendering by introducing Blockchain to take care of Security and Reliability".This system which is proposed behaves as an incentive in systematizing the tendering processes of tendering organizations with the assistance of Blockchain tools and technologies. Enabling them to harness various benefits of e- Tendering pertaining to efficiency in terms of computation as well as the cost of procurement, shortened tendering cycles, full transparency in the whole process. Avoidance of human discretion/interference will lead to lesser mistakes, availability of complete audit trail, and evidential data. By applying Blockchain it provides greater security than traditional database-based internet services.

III. EXISTING SYSTEM

The current existing system is not being transparent, security is also a major issue for these portals leading to fraud and manipulation of data stored in a centralized database If a hacker gets hold of this database, bids can be leaked to competitors leads to huge financial and strategic loss for a business. Lack of confidentiality and transparency in the tendering process and giving contracts to other agencies for any project without verifying their previous works has led to unwise use of money and the spirit of speculation. The project is to implement the E tendering process so that confidentiality can be maintained and the bidding can be done secured online using the concept of Blockchain technology.

IV. PROPOSED METHODOLOGY

A Blockchain may be a series of immutable information of records this is often managed by a cluster of computer systems not owned by way of any single entity. Each of these blocks of knowledge is secured and certain to one another victimization scientific discipline principles. A Blockchain is a chain of virtual blocks that contain statistics of transactions. The information on a Blockchain is secured via cryptography. Every block is connected to all or any of the blocks before and after it which makes it hard to tamper with one report because it is associated with different blocks additionally.1.The Tender company First register his company details his credentials are sent to his mail address using SMTP, Login to the application and uploads the tender details.2.Bidder Company login to the application and view the bidding details and bid for the tender based on the tendering category.3.Bidder company should maintain previous work details, Company profile, and client company details.4.Client Company will post their feedback and Ratings related to work to the bidder company. 5.Tender company verifies the details provided by the bidder and bidder quotation details are secured by using Blockchain technology, algorithms like SHA, AES method. 6. The tender company verifies the bidder company details, quotation amount, client previous work, client rating, company profile and declares the winner the bidder company can view the selected winner on that tender category.



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V. CONCLUSION

For applications like 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, the security requirements from this type of application can only be solved by using fair, decentralized technology such as SHA, AES Rijndael Algorithm & Blockchain concept.Blockchain technology is the key to this tender technology nothing can be manipulated easily by anyone, at any place, and at any time. The main intention of our project is to identify problems in the Tender process, the main contributions that have been made to improve bidding application, And to excellence, the benefits of Blockchain technology in E tendering. The Tender Company, Bidders, and Client s will get Encrypted security from the initial to the final stage bidding process. Currently, Blockchain technology has become very promising and many contributions are made using this technology in the recent decade. Many of the countries' scientific communities and the mains are interested in making use of Blockchain technology. the main reason which makes everyone uses this Blockchain technology is because of its security and it reduces the frauds and errors in the transaction sector.

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