

DEVELOPING AN ANTI-CORRUPTION SMART TOOL TO REDUCE CORRUPTION USING SMART CONTRACTS IN THE E-TENDERING PROCESS

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Abstract - Government-funded projects must use tendering, which is a lengthy procedure that encourages corruption due to the lack of transparency. In this project, a solution utilizing bigdata as a service is presented for quick and transparent management of public projects that enables different stakeholders to analyze the entire process. Efforts to avoid corruption can help to lower the number of cases. In order to support the Corruption Eradication Commission and make the E-Tendering Electronic Procurement System (EPS) more open, transparent, and effective in preventing corruption, this research intends to improve it (CEC). This study utilized management information system and business process reengineering techniques. The proposed information system design in this study is formed of 4 stages: entity-relationship diagram (ERD) creation, relational database creation, use case diagram creation, and data flow diagram creation (DFD). the evaluation of bids more quickly, the elimination of face-to-face interactions to avoid collusion, the improvement of information transparency, and the reinforcement of E-Tendering monitoring through the use of SMART (Self Monitoring, Analysis, Reporting Technology).

effects on enhancing the business climate, changing people's business practises, and escalating poverty. Corruption in Public Procurement is very vulnerable because 52% of the State Budget is provided for Public Procurement. From that amount, 70% of budget misuse occurs in Public Procurement. The implementation of an Electronic Procurement System (EPS), which is split into two components, ETendering and E-Purchasing, is one way the government works to prevent corruption in the Public Procurement sector. This platform ensures that the data of every contract is made public and the citizens can vote on various issues which ensures scrutiny of the work done by the government. The rising of E-Commerce are succeeded in making sure that the procurement processes in business organization work better. The accessibility offered by computerized management system make daily business activities involving procurement a lot easier Tender tracking is another vital process in procurement. An enhanced tracking system should be used in bigger business organization as they might have quite a numbers of tenders and contracts to track. However, using the conventional approach, some human error might have occurred thus lead to inefficiency and delay in works which unfortunately will result in some losses faced by the business organization.

Key Words: tender, transparency, corruption, procurement.

1. INTRODUCTION

The procedure of releasing tenders and choosing the firm that offers the lowest price while taking their track record into consideration is often how government projects operate. The bidding process may occasionally be corrupted, government officials demand bribes, bribes are paid to reveal the bids of rival contractors, and threats are made against other bidders. These are only a few of the problems with this system. Almost all nations in the world are still plagued by corruption, which is a fundamental issue. It has been established that corrupt activities hurt a variety of sectors of society and impede economic growth. These include their detrimental

2. MOTIVATION

The procurement and completion of government-issued projects is a very time-consuming procedure involving a lot of participants and documentation. While the process being digitalized, there are still some drawbacks, such as corruption and a lack of a feedback system to guarantee that the job is satisfactory. The existing system includes a mechanism for citizens to request information, such as RTI [3], but the process is very difficult to follow up on because the authorities will forward requests to many agencies, and citizens won't know which department to forward the request to. The amount of paperwork that the authorities must review during this process makes it extremely time-consuming

and expensive. Even when the work is finished, the contractors who also submitted a bid for a particular project are not paid on schedule, which further motivates them to bribe various officials to receive their cash. Even if the work is done correctly, the contractors still need to buy the permission of outside certification agencies. Finally, the general public is affected by all of these elements.

A. Secure Bidding and Easy to Use Platform:

This portal makes it simple for contractors to submit a bid for a specific government project. Each contractor will receive a personal identification using their private key. They can then sign and submit their proposal for a specific project using their private key. Using the contractor's public key, the identification and bid verification may be completed. This makes sure that no one may reveal the details of the bid that the contractor submitted until the results of the blind bidding on the bigdata are finalized. As a result, this solution will benefit the contractor who merits the opportunity to receive the contract.

B. Citizens Can Rate the Work of the Government:

By using this platform, citizens can immediately report issues, ensuring that the contractor's work is of a high standard. This makes sure that the contractor's reputation will be taken into consideration the following time there is a bid process. Each contractor's reputation as well as the total money paid by the government for the entire contract will be recorded in a public ledger. This makes sure that the general public is informed about the entire project, from beginning to end. The people can now vote on topics freely without wasting time asking the government for information about various papers that are kept in outdated systems or occasionally without any kind of digitization. The public's impact can be used to bring up a variety of issues with the relevant authorities, and the suggested platform will guarantee that their views are heard and cannot be altered or eliminated.

C. Contractor Can Receive Payments on Time:

In many nations, the main problem with government projects is that even when the work is finished, the contractors do not get paid on schedule. The blockchain-based smart contract in the proposed platform makes sure that the various project milestones are checked, and upon completion and the organization issuing the tender giving its permission, the payments are immediately

transferred to the contractor's account. Due to the increased number of contractors as a result of fixed and prompt payment, which ultimately causes a decrease in project cost due to competition, this improves the overall process of competition for a project.

3. METHODOLOGY

Conducting literature reviews and in-depth interviews is the initial phase in the data collection process. The GPA contains the E-Tendering flow process chart and the time required for each process, which are the data required to model the as-is process. The second step involved modelling and testing the E-Tendering procedure (as-is) using the iGrafx programme.

The result of the As-Is process simulation in the iGrafx programme will reveal which process needs to be improved.

The goal-problem-solution model is created in the third step using the Voice of the Customer (VOC) to identify problems and obtain the desired solution. The fourth step involved creating an information system design based on the proposed solutions.

In the fifth stage, the suggested solution is divided into three categories, and from those categories, three scenarios are selected. Three alternative scenarios are modelled and simulated using iGrafx, and the outcomes of each are evaluated with those of the As-Is procedure.

The simulation results are summarized, and each scenario is compared to the others to determine which is better.

4. SYSTEM FEATURES

- i. E-sourcing: requirements definition and pre-qualifying potential suppliers;
- ii. E-tendering: request for information, proposals and quotations;
- iii. E-auctioning: evaluating suppliers, negotiation and contract management;
- iv. E-ordering and payment: creating requisitions and purchase orders, and receiving ordered items;
- v. Analytics: view spends and take corrective measures as required.
- vi. E-informing is vital in the e-procurement process. It involves a two-way exchange of

information between all parties involved in the process to generate mutually beneficial outcomes.

A. KEY FEATURES:

- i. **Purchase Requisitions Simplified:** Every organization needs to buy things, but without a proper trail, the likelihood of fraud vastly increases. With the requisition process in place, the purchasing department can raise a formal request to purchase managers to take the necessary action.
- ii. **Manage Vendors/Suppliers:** It's hard managing multiple vendors, you have to negotiate for better deals & the whole process is a mess. Integrated vendor management software in procurement makes managing vendors easy.
- iii. **Smooth Quotation Management. Literally!:** Traditional approach to quotation management can be a complex & error-prone process leading to loss of business. Now you can manage all your RFQs, RFPs, and RFIs via Procurement technology without having to spend a minute collecting information from different suppliers.
- iv. **Access Your Reports Anytime, Anywhere:** Purchasing reports and data play a vital role in the perpetual growth of your business helping you forge a stronger bond with suppliers with its analytics insights and get a bird's eye view of your business any time you need.
- v. **Your Data Is Safe With Us and Always Live:** With inaccurate and unreliable data, organizations cannot make sound procurement decisions. We have hosted Amazon Web Services (AWS) ensuring highly secure end-to-end data encryption along with 99.99% uptime.
- vi. **Integrated Inventory Management:** Inventory management in procurement is a must for companies who have complex supply chains that require a large number of procurement personnel to deploy in order to gather all of the necessary supplies needed by the business.
- vii. **Accounts Payable Automation:** Manual procurement invoicing is historically a process prone to errors. Businesses can now digitize existing paper invoices and reduce the burden

from accounts payable & finance teams via an inbuilt invoice management software.

- viii. **Purchase Order Made Adaptable:** If you need to trace the path of your product, from purchase of raw materials to the sale, then purchase order software is of paramount importance which is now a challenge for most businesses as they struggle with poor supply chain transparency.
- ix. **Accuracy In Invoice Management:** It takes more to manage than just payments - it takes control of purchase-to-pay processes. That is what Procurement and Accounts Payable Software is for.

5. SUMMARY

In this paper, a solution utilizing blockchain as a service is presented for quick and transparent management of public projects that enables different stakeholders to analyze the entire process. This study utilized management information system and business process reengineering techniques.

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