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# A Survey on Government Bidding Security Management using Blockchain

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**ABSTRACT:** Generally, the Tenders or contracts are used by governments and companies to procure goods or services. Wrongful tender management leads to huge losses in case of faulty practices. This includes favouring of contractors, improper record maintenance, lack of transparency, hacking, data modification and other issues. 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 tender documents, applications, bid proposals, company profiles, past records, approving officer details, rejection details to ensure a completely transparent tendering process.

## I. INTRODUCTION

The current Tender management system is of two different sectors one is on **Private Sector** and another one is **Public Sector**. (1)

### Private Sector

There are certain stages with acronyms starting with “R”

- Request for Information
- Request for Tender
- Request for Quotation
- Request for Proposal
- Request for Offer

### Public Sector

Public Sector is divided into three stages:

- Expression of Interest (EOI)
- Pre – Qualification Questionnaire (PQQ)
- Invitation to Tender (ITT)

As the above shown are different types of sectors in which Government tends to offer biddings to the citizens of India who can actively participate to buy the different types of materials in different types of department according to their usage in different manner.

### The Actual bidding process generally is as follows :

#### **Step 1: Request For Proposals**

Product owners or project teams first need to issue a request for proposal (RFP) or invitation to bid (ITB) to initiate the bidding process. A tender manager then prepares a package that indicates specifics about the project. The package should effectively communicate the goals, priorities, and requirements of the project so that bidders have a clear picture of what needs to be done. This should include deadlines, expectations, specifications, supporting documents, and the list of requirements that the bidders should submit.

Due diligence is essential when evaluating bidders: it is typical to request the bidding company’s profile, project portfolio, personnel resumes and financial statements.

The invitation to bid can be open to everyone, or strictly by invite.



### Step 2: Bid Preparation Of Interested Parties

Once an RFP is issued, interested parties will begin to evaluate the proposal. In this context, the project manager who prepares the bid is called a bid manager.

The bid manager communicates with the project team to verify the availability of resources that they're about to commit, as well as liaising with the company that issued the RFP for clarifications.

If the bidding party is a general contractor, this process may include facilitating another bidding session with subcontractors or third-party vendors.

Once all details are compiled and organized, the bid can then be passed to the requesting organization.

### Step 3: Bid Evaluation And Selection

After collecting the bids, tender managers compare them against each other and their requirements.

Contrary to some beliefs, the lowest bid doesn't always win. The most popular way to pick the best vendor or service provider is the MEAT criteria (most economically advantageous tender). Apart from the cost, MEAT criteria consider quality, accessibility, social value, innovation, and more.

Selection can be a two-step process where applicants are shortlisted before the final tenders are selected.

Communication between the buyer and bidders is expected during this stage. The tendering organization can also request presentations or interviews for more clarification.

### Step 4: Contract Negotiation And Awarding

The final stage of bidding is negotiation and selection.

After picking the preferred vendor or service provider, the tendering organization will inform them of the final approved price and additional requests if applicable.

The management and administrative departments of the project team's organization can start getting involved at this stage. Legal terms, payment terms, deliverable schedules, and other important details are documented and signed by the involved parties to solidify the agreement.

### Government Agencies involve in Tenders: (1)

Ministry of Agriculture, Ministry of Panchayati Raj, Ministry of Chemicals and Fertilizers, Ministry of Civil Aviation, Ministry of Coal, Ministry of Commerce and Industry, Ministry of Communications and Information Technology, Ministry of Consumer Affairs, Food and Public Distribution, Ministry of Co-operation, Ministry of Corporate Affairs, Ministry of culture, Ministry of Defence, Ministry of Earth Sciences, Ministry of Environment, Forest and Climate Change, Ministry of External Affairs, Ministry of Finance, Ministry of Food Processing Industries, Ministry of Health and Family Welfare, Ministry of AYUSH., Ministry of Heavy Industries, Ministry of Home Affairs, Ministry of Housing and Urban Affairs, Ministry of Education, Ministry of Women and Child, Ministry of Youth Affairs and Sports, Department of Sports, Ministry of Information and Broadcasting, Ministry of Labour and Employment, Ministry of Law and Justice, Ministry of Micro, Small and Medium Enterprises, Ministry of Mines, Ministry of Minority Affairs, Ministry of New and Renewable Energy, Ministry of Personnel, Public Grievances and Pensions, Ministry of Petroleum and Natural Gas, Ministry of Power, Ministry of Railways, Ministry of Road Transport and Highways, Ministry of Rural Development, Ministry of Science & Technology, Ministry of Social Justice and Empowerment, Ministry of Statistics and Programme Implementation, Ministry of Skill Development and Entrepreneurship, Ministry of Steel, Ministry of Textiles, Independent Departments, Independent Agencies/Bodies, Intelligence

These are the above Government Agencies which includes in Providing Biddings to the citizen of India who can participate and buy their needs. There are many types of agencies with many types of materials which can be used by different people.

### BIDDING PROCEDURE IN CENTRAL GOVERNMENT :(2)

1. Bidder should do Online Enrolment in this Portal Then the Digital Signature enrolment has to be done with the e-token, after logging into the portal. The e-token may be obtained from one of the authorized Certifying Authorities such as eMudhraCA/GNFC/IDRBT/MtnlTrustline/SafeScript/TCS.
2. Bidder then logs into the portal giving user id / password chosen during enrolment.
3. The e-token that is registered should be used by the bidder and should not be misused by others.
4. Digital Signature Certificate (DSC) once mapped to an account cannot be remapped to any other account. It can only be Inactivated.
5. The Bidders can update well in advance, the documents such as certificates, purchase order details etc., under My Documents option and these can be selected as per tender requirements and then attached along with bid documents during bid submission. This will ensure lesser upload of bid documents.





6. After downloading / getting the tender schedules, the Bidder should go through them carefully and then submit the documents as per the tender document, otherwise, the bid will be rejected.
  7. The BILL OF QUANTITIES(BOQ) template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns , else the bidder is liable to be rejected for that tender. Bidders are allowed to enter the Bidder Name and Values only.
  8. If there are any clarifications, this may be obtained online through the eProcurement Portal, or through the contact details given in the tender document. Bidder should take into account of the corrigendum published before submitting the bids online.
  9. Bidder, in advance, should prepare the bid documents to be submitted as indicated in the tender schedule and they should be in PDF/XLS/RAR/DWF formats. If there is more than one document, they can be clubbed together.
  10. Bidder should arrange for the EMD as specified in the tender. The original should be posted/couriered/given in person to the Tender Inviting Authority, within the bid submission date and time for the tender.
  11. The bidder reads the terms and conditions and accepts the same to proceed further to submit the bids
  12. The bidder has to submit the tender document(s) online well in advance before the prescribed time to avoid any delay or problem during the bid submission process.
  13. There is no limit on the size of the file uploaded at the server end. However, the upload is decided on the Memory available at the Client System as well as the Network bandwidth available at the client side at that point of time. In order to reduce the file size.
  14. It is important to note that, the bidder has to Click on the Freeze Bid Button, to ensure that he/she completes the Bid Submission Process. Bids Which are not Frozen are considered as Incomplete/Invalid bids and are not considered for evaluation purposes.
  15. In case of Offline payments, the details of the Earnest Money Deposit(EMD) document submitted physically to the Department and the scanned copies furnished at the time of bid submission online should be the same otherwise the Tender will be summarily rejected
  16. The Tender Inviting Authority (TIA) will not be held responsible for any sort of delay or the difficulties faced during the submission of bids online by the bidders due to local issues.
  17. The bidder may submit the bid documents online mode only, through this portal. Offline documents will not be handled through this system.
  18. At the time of freezing the bid, the eProcurement system will give a successful bid updation message after uploading all the bid documents submitted and then a bid summary will be shown with the bid no, date & time of submission of the bid with all other relevant details. The documents submitted by the bidders will be digitally signed using the e-token of the bidder and then submitted.
  19. After the bid submission, the bid summary has to be printed and kept as an acknowledgement as a token of the submission of the bid. The bid summary will act as a proof of bid submission for a tender floated and will also act as an entry point to participate in the bid opening event.
  20. Successful bid submission from the system means, the bids as uploaded by the bidder is received and stored in the system. System does not certify for its correctness.
  21. The bidder should see that the bid documents submitted should be free from virus and if the documents could not be opened, due to virus, during tender opening, the bid is liable to be rejected
  22. The time that is displayed from the server clock at the top of the tender Portal, will be valid for all actions of requesting bid submission, bid opening etc., in the e-Procurement portal. The Time followed in this portal is as per Indian Standard Time (IST) which is GMT+5:30. The bidders should adhere to this time during bid submission.
  23. During transmission of bid document, the confidentiality of the bids is maintained since the data is transferred over secured Socket Layer(SSL) with 256 bit encryption technology. Data encryption of sensitive fields is also done.
  24. The bidders are requested to submit the bids through online eProcurement system to the TIA well before the bid submission end date and time (as per Server System Clock).
1. Bidder should do Online Enrolment in this Portal
  2. Bidder then logs into the portal giving user id / password chosen during enrolment.
  3. If bidder does not contain any login or password , they must create an account .
  4. All the Current auctions will be displayed there, From there the bidder can be able to access the details of the auction information of what time and time etc,
  5. The bidder can book the slot and carry all the documents to the specified location and can participate.
  6. The bidder reads the terms and conditions and accepts the same to proceed further to submit the bids



7. After downloading / getting the tender schedules, the Bidder should go through them carefully and then submit the documents as per the tender document; otherwise, the bid will be rejected.
8. If there are any clarifications, this may be obtained online through the e-auction Portal, or through the contact details given in the tender document. Bidder should take into account of the corrigendum published before submitting the bids online.
9. Bidder, in advance, should prepare the bid documents to be submitted as indicated in the tender schedule and they should be in PDF/XLS/RAR/DWF formats. If there is more than one document, they can be clubbed together.
10. Successful bid submission from the system means, the bids as uploaded by the bidder is received and stored in the system. System does not certify for its correctness.
11. After the participation the item can be their own if the person won otherwise the item will not be allotted to him/her.

## II. LITERATURE REVIEW

Let is review some departments on both some from Central Government and some from State government.

### Ministry of Panchayat Raj:

This Panchayat Raj tenders are based on the Rural area basis needs like Roads and some buildings. These Roads and Buildings are the main roles of this Panchayat raj Ministry . The Roads constructed in the villages like Cement and Thar Roads will be available to tenders in which every one can actively participate in the auction and win. The buildings constructed in Villages like MRO offices and some others like Sachivalayams, Police stations an some other Revenue offices.

The procedure of bidding in this Panchayat Raj is as follows:

1. The Bidder has to join in the Contractors list
2. The tender will be in two modes
  - a. Online
  - b. Offline
3. In Online mode the bidding costs will be more than 1 Core projects.
4. In Offline mode the bidding costs will be less than 20lakhs Projects.

There will be two types of tenders

1. Rated Tenders
2. Percentage Tenders

### Ministry of Indian Railways : (3)

Introduction to contracts and contract documents, the railway is ready with design, detailed drawing, schedule of quantities, Value of tender forms based on contract value TENDER NOTICE. The amount, if any, to be paid for such documents. Regulations for tenders & contracts, GCC & standard specifications and at last tender schedule will be released

This procedure will be available in two modes one is online and another one is offline based on the availability of users of bidding. The part if regular materials will be done in offline mode in different areas because of more availability. The part of some more important in rear materials will be done in online mode in which everyone can actively participate in that bidding process and access their needs and also the financial support for the Indian railways also be improved.

### Ministry of APSRTC: (5)

The Bidder shall log in at the APSRTC page on MSTC ecommerce site with his/her user id and password for item The selection of the bidder will be purely on the basis of lowest offer ( Basic rate + GST) of the item. The bidder shall arrange to remit an amount of 10,000/-. The details of UTR number will be given and the successful bidder can attend the auction on the day of auction.



On the day of auction everyone has to attend at the venue of the auction mentioned in the SMS sent to your mobile phone and have to collect the form and have to fill the details of the form when we reached there and have to wait at the product till the auction head person reached to your Product.

The available materials for the auction conducted in APSTRC will be as follows:

- Unserviceble vehicles
- materials
- tyres and tyre materials
- machinary
- hi-tech bus seats
- flaps
- tubes

#### **Ministry of AP FOREST: (6)**

According to the rules of AP FOREST department the bidder should login and have to enter the details with login and password and have to read the available auction accordingly and have to select the required section and have to apply with minimum deposit and the conformation of bid details will be sent to out respected mobile phones.

The Products like trees and some infrastructure which is available to be auctioned will be notified to the person who are ready for bidding and this will mostly done in the offline mode and some few will be done in online modes. The people who are ready for bidding must be reach to the location and have to verify the product and have to participate in the bidding. Once the bidding was completed then there will be no cancellation of the bidding.

#### **Ministry of personnel public grievances of tenders: (4)**

Introduction to contracts and contract documents are procured and makes file of all the details of infrastructure to be submitted on bidding. The eligibility criteria comes matters and every bidder has some stages of education levels to bid. All the details of the bidder should be entered in the application

#### **Ministry of Road Transport & Highways of tenders:**

The bidder who wants to involve or participate in the bidding process must be fill the application form and have to pay some non refundable document fee of rs.500 and the bidder should submit online in prescribed format in the website. The ministry have chances to reject the bidding according to their reasons.

#### **AP medical & infrastructure development of tenders:**

The bidder should be login in aprocurement.gov website and the bidder want to pay processing fee of rs.5,625/- and must have valid manufacturing license and some important documents. And the bidder has to note down the auction details and date of the auction and must have to attend with proper documents.

### **III. REVIEW FINDINGS**

The main Problems in which we over come in our survey are as mentioned below

1. Difficult to Navigate
2. Tenders are very dense and confusing
3. Difficult to manage the data

On basis on the above three main problems let us take some departments and describe it in a clean way

#### **Ministry of Panchayat Raj:**

Mainly in Offline bidding, some of the bidders will try compromise the other co bidders, if The co bidder doesn't agree with that that tends to lot of threats to the co bidder

The Price of the auction product may affect due the above activities which tends to loss to Government.

Since the offline bidding was done to big projects it may include some political interference and there will be the less chance for the participation for common man.



**Ministry of Indian Railways:**

The demand is over estimated and procurements require administrative approvals at higher levels, as well as necessary budget allocations such manipulations are not possible to be done by the level executing the procurement process. Un-necessary complexity of bidding documents used to create confusion to hide corrupt behaviour and make monitoring difficult. decision makers are biased (bribes, kickbacks or conflicts of interest involved). Excessive (unnecessarily high) price as a result of limited or nonexistent competition

**Ministry of APSTRC :**

There will be no warranty to any person if he/she not attended for the auction, The venue details of the auction will be replaced at any time without any intimation to the bidders and the details of the bidder will be released which makes cause of harm to the bidder which includes the less security of data.

Since the change in the Venue details there may be no participation of the bidder which may effects the price of the auction product. And due to the threats the bidder may not shows interest to participate in the bidding procedure.

**Ministry of AP FOREST:**

There will be less security of the bidder, because the details of bidder will be released in improper management which leads harm to the bidder and the venue details are been shifted without any intimation to the bidder.

Since the security is less in the existing system the bidder may have chances of harm by the co bidder if he/she does not agree with the compromise. Coming into the part of the venue details this is one of the main reason in which there is a chance to get less attendance in the auction procedure.

**Ministry of personnel public grievances of tenders:**

The more basic thing which involves here is the over estimated. Un-necessary complexity of bidding documents used to create confusion to hide corrupt behaviour. The prices will be as the results of limited or nonexistent competition and the lack of security as well.

**Ministry of Road Transport & Highways of tenders:**

The bidders are effected due to the fraud and corrupt practices due to the details revealed publicly. There is the occurrence of corrupt practice, fraudulent practice, coercive practice, undesirable practice and restrictive practice. Due to all of these fraud practices there is less chance of high security of data.

**AP medical & infrastructure development of tenders:**

Here the bidder does not have any warranty if she/he not attended any auctions, once the bidder does not attend the auction there no chance of bidding after certain day. The data of bidders and as well as the full infrastructure will be released before the auction causes the mis lead of the auction

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