**E-BIDDING SYSTEM**

The e-bidding system is an online platform that allows corporate business or government agencies to buy or sell electronic bidding , which will replace the original bidding process with digital solutions which helps the process for the bidders and the organizer making it more flexible.

* Main Aspects of E-Bidding Systems:

1. Registration and Authentication of Users

Vendors - contractors or suppliers - register and authenticate their accounts to take part in the auction.

1. Bid Posting

Tender documents, detailed descriptions of projects, or auction items are available for buyers or organizations to upload for bidders.

1. Automatic Notifications

Notifications are automatically sent to the relevant participants regarding new opportunities, bidding deadlines, and subsequent changes.

1. Bid Submission

Bids or quotations are sent by bidders through a secure online portal.

1. Bid Evaluation

Bids are evaluated automatically or manually, according to instructions given beforehand.

1. Communication In Real-time

Messaging systems or a question and answer module enabled between bidders and the organizer.

1. Security During Payments

Payment gateways for deposits for the bids or payments for auctions.

**ADVANTAGES**

* Advantages of E-Bidding System:

1. Efficiency: Less time is spent on manual activities.
2. Cost-Effectiveness: Saves on paper, postage expenses, and administrative costs.
3. Transparency: Reduces corruption and bias through established audit trails.
4. Wider Reach: Allows more vendors or contractors across the world to participate.
5. Real-Time Updates: Provides information to all stakeholders promptly.

**FUNCTIONAL REQUIREMENTS**

Here are the functional requirements for an e-bidding system, organized into key areas -

1. User Management

User Registration and Authentication: Users, including buyers, bidders, and administrators, should be able to register and log in securely.

Role-Based Access Control: Different roles such as Admin, Buyer, or Bidder should be assigned with specific permissions.

Profile Management: Users should have the ability to manage their personal and company profiles.

2. Tender/Bid Management

Tender Creation: Buyers should be able to create and publish tenders that include detailed specifications, deadlines, and evaluation criteria.

Document Upload: The system should support the uploading of tender documents, drawings, and terms.

Bid Submission: Bidders should be able to submit their bids securely, including pricing, technical details, and necessary documents.

Amendments and Clarifications: Buyers should have the option to issue updates or clarifications to tender documents, ensuring all bidders are notified.

3. Notifications and Alerts

Real-Time Notifications: Users should receive notifications about new tenders, bid deadlines, updates, and results through email, SMS, or platform notifications.

Reminders: The system should send reminders for bid submission deadlines or any pending actions.

4. Search and Filter Options

Tender Search: Bidders should be able to search for tenders using filters such as location, industry, budget range, or keywords.

Saved Searches: Bidders should have the option to save their frequently used search criteria.

5. Bid Evaluation

Evaluation Criteria: Buyers should be able to set automated or manual evaluation criteria (e.g., cost, technical compliance).

Bid Comparison: Tools should be provided to compare submitted bids side-by-side.

6. Security

Data Encryption: Sensitive bid data should be encrypted to ensure confidentiality.

Secure Login: Multi-factor authentication (MFA) and strong password policies should be implemented for secure login.

7. Payment and Financial Management

Bid Security Deposits: The system should support payment processing for bid security deposits.

8. Reporting and Analytics

Bid Status Reports: Create real-time updates on the progress of tenders and bids.

Supplier Performance Reports: Monitor supplier history and key performance indicators.

Audit Reports: Generate logs for compliance and auditing needs.

9. Communication and Support

Q&A Section: Enable bidders to pose questions and receive responses regarding a tender.

Messaging System: Facilitate direct communication between buyers and bidders.

Help Desk: Offer a support portal for users to report issues or request help.

10. System Administration

Dashboard: Provide a unified dashboard for administrators to oversee the system.

User and Role Management: Allow administrators to manage user accounts and assign or revoke roles.

System Configuration: Enable the setup of deadlines, notifications, and other system parameters.

11. Mobile and Multiplatform Support

Responsive Design: Ensure the system functions smoothly on desktops, tablets, and smartphones.

Mobile App: Offer an application for easier access to bidding features.

12. Compliance and Legal Features

Digital Signatures: Enable bidders and buyers to electronically sign contracts or bids.

Regulatory Compliance: Ensure compliance with legal standards such as e-procurement laws, data privacy regulations, and anti-corruption policies.

**SYSTEM REQUIREMENTS**

The system requirements for an e-bidding system include hardware and software specifications necessary to develop, deploy, and run the system effectively. Here's a breakdown of the requirements:

1. Hardware Requirements

a) Server-Side Requirements (For Hosting the System)

Processor: Multi-core processor (e.g., Intel Xeon or AMD EPYC) with high clock speed.

RAM: Minimum 16 GB (recommended 32 GB or more for high traffic).

Storage: SSDs with a minimum of 500 GB storage for faster read/write speeds. Expandable storage for storing tender documents and logs.

Network: High-speed internet with at least 1 Gbps bandwidth.

Redundancy: Backup servers and redundant power supplies for failover and disaster recovery.

b) Client-Side Requirements (For Users)

Device Compatibility: Desktop, laptop, tablet, or smartphone.

Operating Systems: Compatible with Windows, macOS, Linux, Android, and iOS.

Browser: The latest versions of popular browsers like Google Chrome, Firefox, Microsoft Edge, or Safari.

Internet Speed: At least 5 Mbps for smooth operation.

1. Software Requirements

a) Server-Side Software

Operating System:

Linux, preferably Ubuntu, CentOS, or Debian, for security and stability.

Windows Server for Microsoft environments.

Web Server:

Apache HTTP Server or Nginx for hosting web applications.

Database Management System (DBMS):

MySQL, PostgreSQL, or MS SQL Server for relational database needs.

Application Frameworks:

Backend: Node.js, Django (Python), Spring Boot (Java), or Laravel (PHP).

Front-end: React, Angular, or Vue.js for user interactive interfaces.

Programming Languages:

Based on the selected framework: Python, Java, PHP, or JavaScript

Secure Payment Gateway:

Stripe, PayPal, or Razorpay for making the bid deposits and payments

SSL Certificate:

For using HTTPS to enable secure communication.

b) Client-Side Software

Web Browser: Up-to-date browsers with HTML5, CSS3, and JavaScript capabilities.

PDF Reader: For viewing tender documents and bid submissions.

Email Client: Use for notification and alerts.