"Tender Management System"

A Societal Report submitted in partial fulfilment of the requirement for the award of degree of

MASTER OF COMPUTER APPLICATIONS

Of

Visvesvaraya Technological University

BY

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(1BO23MC027)

Under the Guidance of

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2024-2025

Brindavan College of Engineering

Dwarakanagar, Bagalur Main Road, Yelahanka,Bengaluru-560063

Department of Master Of Computer Applications

CERTIFICATE

This is to certify that *N DILIP KUMAR(1BO23MC027)* has completed his III Semester Societal Project [22MCAL38] titled "*Tender Management System"* as a partial fulfilment for the award of Master of Computer Applications degree, during the academic year 2024-25 our supervision.

Guide **HOD-MCA** **Principal**

Examiners:

1.

2.

DECLARATION

I, N Dilip Kumar, student of 3rd Semester MCA (VTU), Brindavan College of Engineering, Bangalore, bearing (USN No 1B023MC027), hereby declare that the project titled "Tender Management System" has been carried out by me under the supervision of the Internal project Guide, Asst. Prof. Kavya K S, Dept. of MCA at Brindavan College of Engineering. and submitted in partial fulfillment of the requirements for the award of the Degree of Master of Computer Applications by Visvesvaraya Technological University during the academic year 2024-2025. This report has not been submitted to any other Organization/University for any award of degree or certificate.

ACKNOWLEDGEMENT

I am thankful to the Principal of Brindavan College of Engineering- Dr. Bhagappa Sir, for extending his support and encouraging us to take up this challenging Societal Project. I extend my gratitude to the guide, Asst. Prof. Kavya K S, MCA Department, for his constant support and encouragement. Sir has been helping me out in every aspect of my project. I am grateful to you for all your help. I immensely thank my family for their continuous support. My parents and Sisters have been the backbone to me, and without their suggestions, I would not have completed the project in the stipulated time. I am thankful to and fortunate enough to get constant encouragement, support, and guidance from all the Teaching staff of MCA, which helped us in successfully completing our project work.

N DILIP KUMAR

(1BO23MC027)

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

Tendering is a crucial process in both the public and private sectors for acquiring goods and services through a competitive bidding process. Traditionally, tendering involves paperwork, manual processing, and significant administrative overhead. To address these challenges, a Tender Management System (TMS) is developed as a web-based solution that automates and streamlines the entire tender lifecycle—from tender creation to bid evaluation and awarding. This system enhances transparency, speeds up procurement, ensures compliance, and reduces the chances of human error.

A Tender Management System (TMS) is a comprehensive web-based solution that streamlines the entire lifecycle of the tendering process. From tender creation and publishing to bid submission, evaluation, and awarding, the system provides a centralized platform that allows both administrators and vendors to interact in a secure and structured environment. This automation ensures that the tender process is more transparent, time-saving, and compliant with organizational or governmental policies.

The TMS is designed to reduce paperwork, eliminate manual errors, and provide real-time tracking and notifications. It includes features like secure user authentication, document uploads, deadline alerts, bid comparisons, and report generation. Such functionalities help procurement teams manage multiple tenders simultaneously while ensuring data integrity and historical traceability of all actions performed within the system.

Moreover, the adoption of a Tender Management System enhances stakeholder confidence, as it promotes fair bidding opportunities and reduces the chances of manipulation or bias. It is especially beneficial for large organizations and government institutions where procurement transparency is legally mandated. As technology continues to evolve, integrating intelligent features like data analytics and AI-based bid evaluation could further improve the decision-making capabilities of the system**.**

CHAPTER 2

SYSTEM ANALYSIS

The existing manual or semi-digital tendering systems have significant limitations, including time delays, a lack of transparency, human error, and difficulty in tracking the status of bids and tender awards. Organizations often struggle with missing documents, poor communication with bidders, and difficulty in maintaining historical data. The purpose of the preliminary investigation is to assess these issues and propose a digital solution that enhances operational efficiency, accuracy, and transparency in the tendering process.

A Tender Management System (TMS) developed using Java (for backend logic and user interface design) and MySQL (for relational data storage) is proposed. This combination ensures a scalable, secure, and platform-independent solution. The Java programming language provides strong object-oriented capabilities, high security, and a vast ecosystem of libraries, while MySQL is a reliable and efficient open-source database management system suitable for managing structured data.

2.1 Feasibility Study

The feasibility study evaluates whether the system is viable across different dimensions, technically, operationally, and economically. The goal is to ensure that the proposed system can be built with available resources, meets business goals, and can be adopted with minimal disruption.

2.2 Technical Study

A technical study involves examining the current procurement processes to identify functional and non-functional requirements for a digital solution that manages tender creation, bid submission, evaluation, and contract awarding. The analysis focuses on understanding user roles such as administrators, evaluators, and vendors, data flow, and security needs while ensuring compliance with procurement regulations. It includes defining system architecture, frontend, backend, database, identifying key entities, and recommending suitable technologies to build a secure, scalable, and efficient system. This study ultimately aims to improve transparency, automation, and accountability in the tendering process.

2.3 Operational Feasibility

Operational feasibility evaluates whether the proposed system can be successfully integrated and used in the day-to-day operations of the organization. It considers how well the system aligns with current procurement workflows, user capabilities, and organizational goals. In the case of a Tender Management System, operational feasibility ensures that the system can streamline tender processes, reduce manual errors, and increase transparency while being user-friendly for both internal staff and external vendors.

It also assesses training needs, staff readiness, change management requirements, and ongoing support to ensure smooth adoption and sustained usage of the system in real-world conditions.

2.4 Economic Feasibility

Economic feasibility involves evaluating whether the financial benefits of implementing the system outweigh its costs. This includes analyzing development or acquisition costs, hardware and software expenses, training, and ongoing maintenance against the expected savings from reduced paperwork, faster processing times, improved accuracy, and minimized human error. Additionally, the system can help prevent costly procurement fraud and ensure compliance with regulations, leading to long-term financial advantages. If the projected return on investment (ROI) is favorable and the cost of implementation is justifiable within the organization's budget, the system is considered economically feasible.

2.5 Gathering Information

Before designing and developing the Tender Management System (TMS), comprehensive information gathering was conducted to understand the current processes, user needs, and pain points. The goal was to collect relevant data from stakeholders and identify both functional and non-functional requirements for the system.

The following techniques were used:

- **Interviews**: Discussions with procurement officers, IT staff, and frequent vendor participants helped reveal the challenges in the current tendering process.
- **Observation**: Watching real-life tender processing steps, from publishing to bid evaluation, highlighted bottlenecks like documentation delays and lack of centralized access.
- **Document Review**: Existing tender forms, bid submission documents, evaluation sheets, and approval letters were studied to identify what data structures and workflows were needed in the new system.
- **Surveys**: Simple questionnaires were distributed to vendors to collect feedback on what features they would expect from a digital tender system.
- **System Benchmarking**: Government and commercial e-tender portals were analysed to understand industry standards and best practices in digital tendering platforms.

2.6 Existing System:

The existing system refers to a manual or semi-automated process used for handling tender-related activities. In many organizations, this includes creating tender documents using word processors, publishing tenders via newspapers or websites, accepting bids in physical form or through email, and evaluating them manually, which can be time-consuming, prone to errors, and lacking in transparency. There may be limited or no integration between departments (procurement, finance, legal), resulting in delays and miscommunication. Additionally, record-keeping and audit trails are often poorly maintained, increasing the risk of data loss, non-compliance, and fraud. The limitations of the existing system highlight the need for a more streamlined, secure, and automated Tender Management System.

The current (manual or partially digital) tendering system involves several steps

- Tenders are created using word processors or templates.
- Notifications are sent via emails or posted on notice boards/websites.
- Vendors download tender documents and submit physical bids or email scanned copies.
- Evaluation is done manually, using spreadsheets or printed documents.
- Communication with vendors is handled through email or phone calls.
- There is limited version control, no real-time tracking, and minimal audit trails.

➢ **Applications of the Existing System:**

- High dependency on physical documentation.
- Prone to human error and data loss.
- Limited transparency and accountability.
- Poor coordination among departments.
- Time-consuming evaluation process.
- Difficult to manage historical records or conduct audits.

2.7 Proposed System:

The proposed Tender Management System is a centralized, web-based application built using Java (backend) and MySQL (database). It aims to automate and streamline the entire tender lifecycle. The system will be accessible via any internet- enabled device, allowing both internal users and registered vendors to manage tender- related tasks efficiently.

- **Application of the Proposed System:**

  - **Admin Dashboard**: Create, publish, and manage tenders.
  - **Vendor Portal**: Register, log in, view available tenders, and submit bids.
  - **Secure Authentication**: Role-based access control for Admin, Vendor, and Evaluator.
  - **Bid Evaluation Panel**: Compare submitted bids against evaluation criteria.
  - **Audit Trail**: Logs of every transaction for compliance and transparency.
  - **Notifications**: Email or in-app alerts for tender publishing, deadlines, and results.
  - **Digital Storage**: Centralized storage for documents and bid records.
  - **Analytics**: Generate reports for past tenders, vendor participation, and evaluation trends.
  -

- **Advantages of the Proposed System:**

  - Streamlined workflows and reduced processing time.
  - Higher transparency and reduced risk of favouritism or corruption.
  - Real-time updates and access to documents.
  - Simplified bid comparison and automated result generation.
  - Improved data security and backup.
  - Easy monitoring and reporting capabilities for management.

CHAPTER 3

SYSTEM REQUIREMENTS

3.1 Software Environment:

The software environment includes the development tools, libraries, languages, frameworks, and services used in building and running the application. Since Java and MySQL are the core technologies, the system is highly portable, modular, and database-driven.

Tender Management System used Java 18 along with a robust IDE is Eclipse. MySQL used for primary database, with MySQL Workbench for database management. Backend development can be handled using JDBC for direct connectivity or Spring Boot for a more scalable and modular architecture. Spring Data JPA is recommended for ORM-based database interactions, while Spring Security ensures secure authentication and role-based access control.

3.1.1 Frontend Development:

Frontend development is the process of creating the visual and interactive components of a website or web application that users engage with directly in their browsers. It involves the use of technologies such as HTML for content structure, CSS for styling, and JavaScript for interactivity. Modern frontend development also leverages frameworks and libraries like React, Angular, or Vue.js to build responsive and dynamic user interfaces. The goal is to deliver a seamless, user-friendly experience across various devices and screen sizes, ensuring optimal performance, accessibility, and usability in alignment with the overall design and functionality of the system.

- HTML/CSS design the user interface for the tender management system.
- JavaScript handles frontend logic and dynamic updates.
- Bootstrap makes the UI user-friendly and ensures it works across different devices.

1. **Web Server:**

   Apache Tomcat widely used web server and servlet container that is compatible with Java web applications. It can be used if you are deploying the application as a web-based tender management system. Jetty or JBoss alternatives to Apache Tomcat.

3.2 Hardware Requirements:

Components	Specifications
Processor	Intel Core i5 or above
RAM	Minimum 8 GB
Hard Disk	250 GB SSD
Display	1080p Monitor
Internet	Broadband 10mbps

Table 1: Hardware Requirements

3.3 Software Requirements:

Components	Specifications
Operating System	Windows, Linux
Java Environment	JDK 17 or 18
IDE	Eclipse
Database server	MYSQL
Frontend Technologies	HTML3, CSS, JS
Backend Technologies	Spring Boot

CHAPTER 4

SYSTEM DESIGN

Tender Management System is an architectural framework and key components required to facilitate a streamlined, secure, and scalable tendering process. It encompasses a multi-tier architecture, typically including the user interface, application layer, business logic implemented using Java and Spring Boot, and MySQL database. The design defines the interaction between core modules such as user management, tender creation, bid submission, evaluation, and award processes. It ensures seamless integration, robust data handling, and role-based access control, supporting the system's overall performance, security, and maintainability.

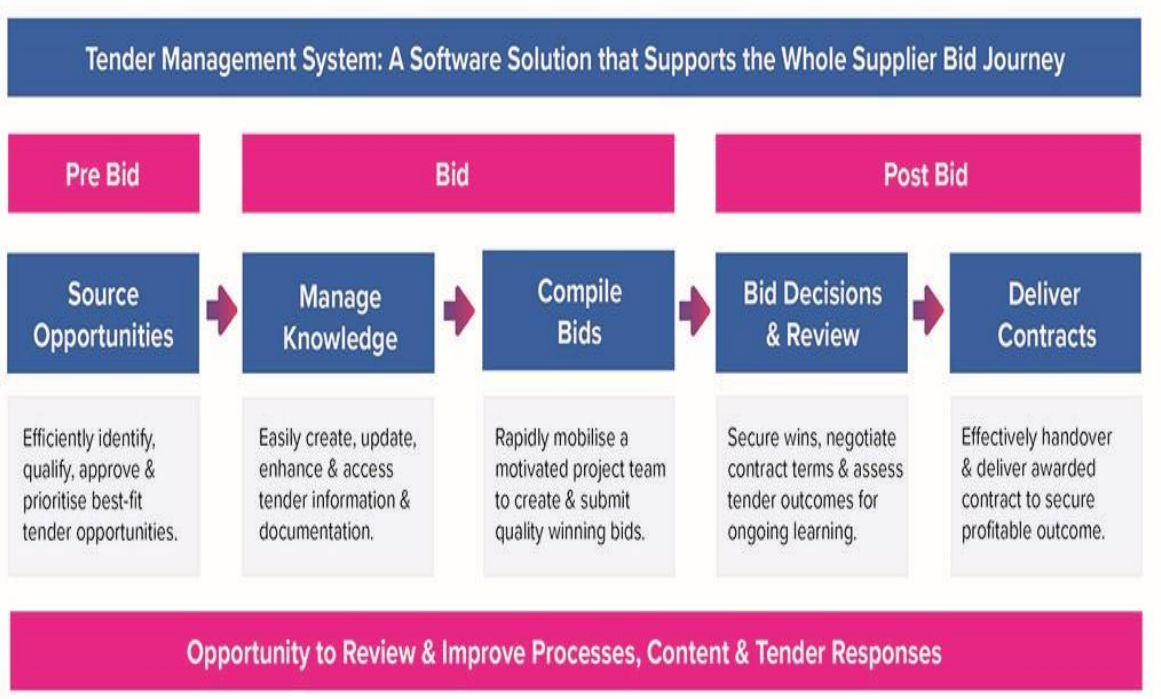

Figure 4.1: Process of Tender Management System

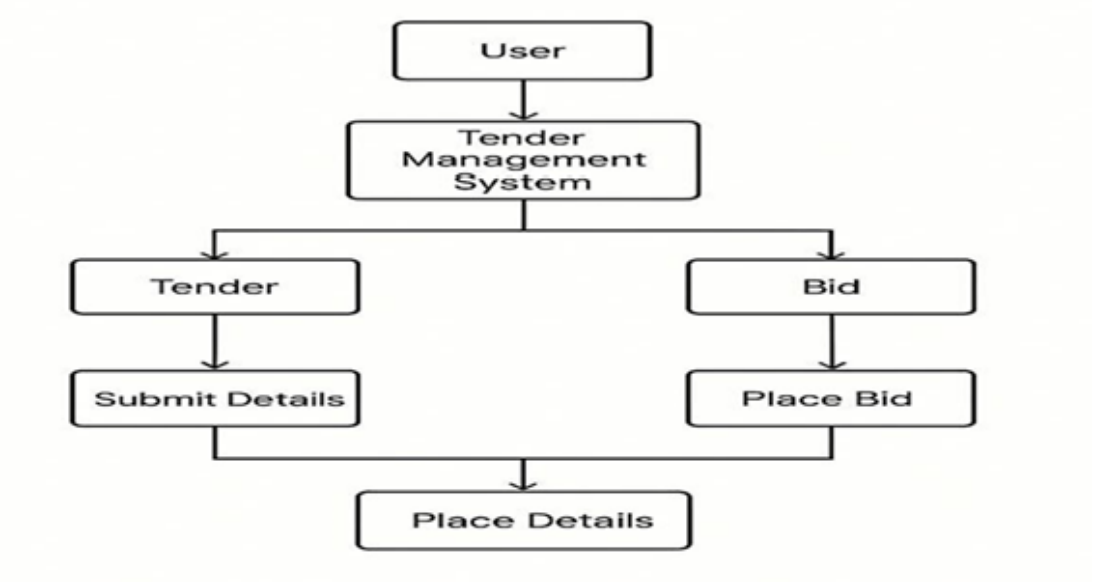

Figure 4.2: Flow Chart of Tender Management System

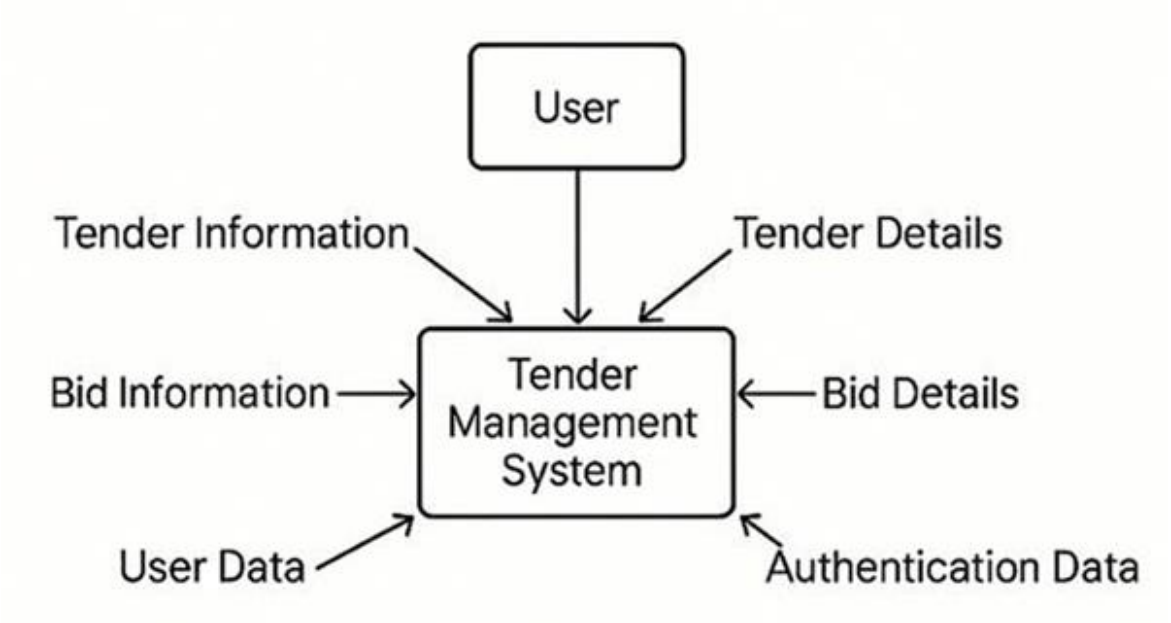

Figure 4.3: Data Flow of Tender Management System

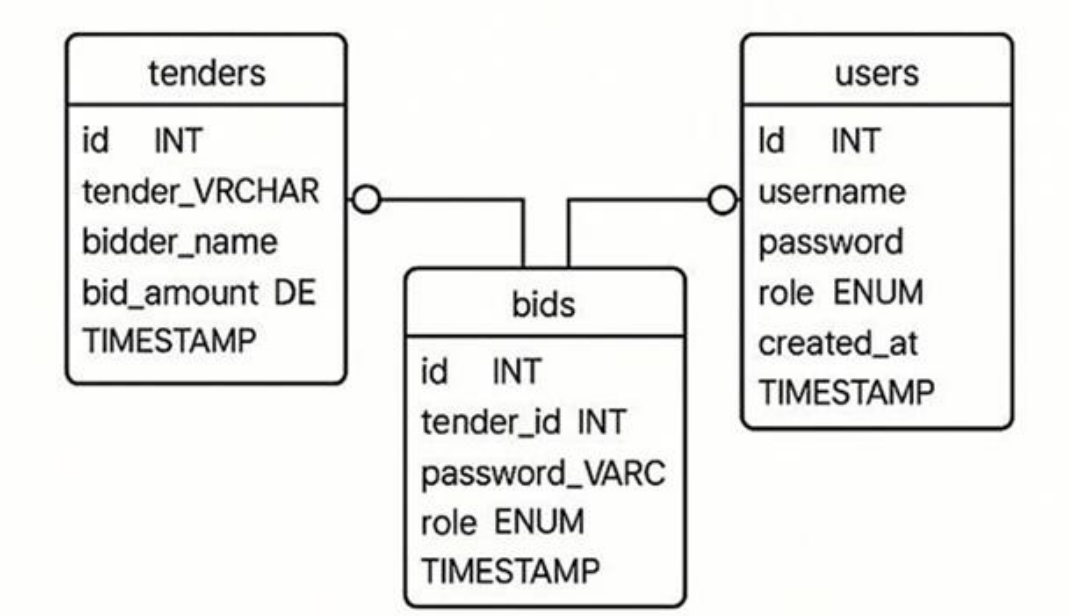

Figure 4.4: Data Design

4.5 Data Dictionary

A Data Dictionary for a tender management system, using Java and MySQL, needs to define all data elements, their types, and associated metadata for efficient data management. This includes details about tenders, bids, vendors, users, and other relevant information. The data dictionary helps to manage data consistency and integrity, as well as to facilitate data retrieval and analysis.

4.5.1.Tender:

- tender_id (INT, Primary Key): Unique identifier for each tender.
- tender_title (VARCHAR): Title or name of the tender.
- tender_description (TEXT): Detailed description of the tender.
- tender_category (VARCHAR): Category or type of tender (e.g., goods, services, construction).
- submission_deadline (DATETIME): Date and time for bid submission.
- status (VARCHAR): Current status of the tender (e.g., draft, open, closed, awarded).
- created_by (INT, Foreign Key to Users table): User ID of the person who created the tender.
- creation_date (DATETIME): Date and time the tender was created.
- modified_by (INT, Foreign Key to Users table): User ID of the person who last modified the tender.
- modification_date (DATETIME): Date and time the tender was last modified.

4.5.2.Bid:

- bid_id (INT, Primary Key): Unique identifier for each bid.
- tender_id (INT, Foreign Key to Tenders table): Tender ID the bid is associated with.
- vendor_id (INT, Foreign Key to Vendors table): Vendor ID that submitted the bid.
- bid_price (DECIMAL): The bid amount.
- bid_submission_date (DATETIME): Date and time the bid was submitted.

4.5.3 Vendor:

- vendor_id (INT, Primary Key): Unique identifier for each vendor.
- vendor_name (VARCHAR): Name of the vendor.
- vendor_contact_person (VARCHAR): Contact person for the vendor.
- vendor_email (VARCHAR): Email address of the vendor.
- \vendor_phone (VARCHAR): Phone number of the vendor.
- vendor_address (VARCHAR): Address of the vendor.
- vendor_registration_status (VARCHAR): Status of the vendor's registration (e.g., active, inactive, pending).

4.5.4.User:

- user_id (INT, Primary Key): Unique identifier for each user.
- username (VARCHAR): User's login name.
- password (VARCHAR): User's password (hashed and salted).
- user_type (VARCHAR): User role (e.g., administrator, tender manager, vendor).
- email (VARCHAR): User's email address.

4.6 Source Code:

```
<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
pageEncoding="ISO-8859-1"%>
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1">
<title>Admin Home</title>
</head>
<body>
<div class="menubar secondnav " style="background-color:white;">
<div id="menucontent" class="container secondnav">
<div id="collapsable-nav" class="collapse navbar-collapse hidden-lg hidden-md">
<ul id="nav-list" class="nav navbar-nav navbar-left pull-left">
<li id="navHomeButton">
<a href="adminHome.jsp">
<span class="glyphicon glyphicon-home"></span> Home</a> <!--Home button is here -->
</li>
<!-- <li class="dropdown">
<a class="dropdown-toggle " data-toggle="dropdown" data-animations="fadeIn fadeInLeft
fadeInUp fadeInRight" data-hover="dropdown">Vendors
<span class="caret"></span></a>                    Dropdown under about us category
<ul class="dropdown-menu">
<li><a href="viewVendor.jsp">View All Vendors</a></li>
<li><a href="ApproveVendor">Approve Vendors</a></li>
<li><a href="vendorDetail.jsp">Vendor Detail</a></li>
</ul>
</li> -->
<li><a href="adminViewVendor.jsp">Vendors</a></li>
<li class="dropdown">
<a class="dropdown-toggle" data-toggle="dropdown" data-hover="dropdown" data-
animations="fadeIn fadeInLeft fadeInUp fadeInRight">
<!--Dropdown under tender category --> Tender
<span class="caret"></span></a>
```

```
<ul class="dropdown-menu">
<li><a href="viewTender.jsp">View all Tenders</a></li>
<li><a href="createTender.jsp">Create New Tender</a></li>
<li><a href="viewTenderBids.jsp">View Tender Bids</a></li>
<li><a href="viewTenderBids.jsp">Accept a bid</a></li>
<li><a href="viewAssignedTenders.jsp">View Assigned Tenders</a></li>
</ul>
</li>



<li class="dropdown">
<a class="dropdown-toggle " data-toggle="dropdown" data-animations="fadeIn fadeInLeft
fadeInUp fadeInRight" data-hover="dropdown">Notice
<span class="caret"></span></a>
<!--Dropdown under about us category –
<ul class="dropdown-menu">
<li><a href="addNotice.jsp">Add Notice</a></li>
<li><a href="removeNotice.jsp">Remove Notice</a></li>
<li><a href="updateNotice.jsp">Update Notice</a></li>
<li><a href="viewNotice.jsp">View All Notice</a></li>
</ul>
</li>

<li>
<a href="LogoutSrv">Logout</a>

</li>

<li>
<!-- Form for searching any tenders or items-->
<form class="navbar-form hidden-xs" action="searchTender.jsp"  >
<div class="form-group" >
            <input type="text" name="tid" class="form-control" placeholder="Find Tenders
by name or tenderId" style="margin-left:10px;" required>
</div>
```

```
<button type="submit" class="btn btn-primary" >Search</button>

</form>
<!--End of form section-->
</li>
</ul>
</div>
</div>
</div>
</body>
</html>
<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
pageEncoding="ISO-8859-1"%>
<%@ page import="java.sql.*,com.hit.utility.DBUtil"%>
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1">
<title>Insert title here</title>
</head>
<body>

<p style="color: red;"> Application
Id: 
<%=bid%></p>
<p style="color: black">
Assigned To:   <%=tid%></p>

<%@ page import="java.sql.*,com.hit.utility.DBUtil"%>
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1">
```

```
<title>Insert title here</title>
</head>
<body>
<div class="marquee"
style="border: 2px #26b0b0 solid; background-color: white">
<%
Connection con = DBUtil.provideConnection();
%>
<h4
style="background-color: #26b0b0; margin-top: -1.8px; padding: 5px;">
<i class="glyphicon glyphicon-volume-up"></i>   Recently Approved Tenders
</h4>

<p style="color: red;"> Application
Id: 
<%=bid%></p>
<p style="color: black">
Assigned To:   <%=tid%></p>

<title>Insert title here</title>
</head>
<body>
<div class="marquee"
style="border: 2px #26b0b0 solid; background-color: white">
<%
Connection con = DBUtil.provideConnection();
%>
<h4
style="background-color: #26b0b0; margin-top: -1.8px; padding: 5px;">
<i class="glyphicon glyphicon-volume-up"></i>   Recently Approved Tenders
</h4>

<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
pageEncoding="ISO-8859-1"%>
<%@ page import="java.sql.*,com.hit.utility.DBUtil"%>
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
```

```
<div class="marquee-content"
    style="padding: 10px; font-weight: bold; font-size: 1.1em">
    <marquee onmouseover="stop()" onmouseout="start()" direction="up" scrollamount="6"
    height="250">
    <!-- Approved Tenders List -->

    <%
    try {
    PreparedStatement ps = con.prepareStatement("select * from tenderstatus order by sysdate() asc
    limit 6");
    ResultSet rs = ps.executeQuery();

    while (rs.next()) {
    String bid = rs.getString("bid"); String tid =
    rs.getString("tid");
    %>
    <hr>
    <p style="color: red;"> Application
    Id: 
    <%=bid%></p>
    <p style="color: black">
    Assigned To:   <%=tid%></p>

    <%
    }
    } catch (SQLException e) { e.printStackTrace();
    }
    %>

    </marquee>
    <!--End of marquee-->
    </div>
    <!--End of marquee content-->
```

```
</div>
<!--End of marquee class-->
</body>
</html>

  <meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1">
  <title>Admin Home</title>
  </head>
  <body>
  <div class="menubar secondnav " style="background-color:white;">
  <div id="menucontent" class="container secondnav">
  <div id="collapsable-nav" class="collapse navbar-collapse hidden-lg hidden-md">
  <ul id="nav-list" class="nav navbar-nav navbar-left pull-left">
  <li id="navHomeButton">
  <a href="adminHome.jsp">
  <span class="glyphicon glyphicon-home"></span> Home</a> <!--Home button is here -->
  </li>
  <!-- <li class="dropdown">
  <a class="dropdown-toggle " data-toggle="dropdown" data-animations="fadeIn fadeInLeft
  fadeInUp fadeInRight" data-hover="dropdown">Vendors
  <span class="caret"></span></a>                    Dropdown under about us category
  <ul class="dropdown-menu">
  <li><a href="viewVendor.jsp">View All Vendors</a></li>
  <li><a href="ApproveVendor">Approve Vendors</a></li>
  <li><a href="vendorDetail.jsp">Vendor Detail</a></li>
  </ul>
  </li> -->
  <li><a href="adminViewVendor.jsp">Vendors</a></li>
  <li class="dropdown">
  <a class="dropdown-toggle" data-toggle="dropdown" data-hover="dropdown" data-
  animations="fadeIn fadeInLeft fadeInUp fadeInRight">
  <!--Dropdown under tender category --> Tender
  <span class="caret"></span></a>
```

```
</marquee>
<!--End of marquee-->
</div>
<!--End of marquee content-->

</div>
<!--End of marquee class-->
</body>
</html>
```

4.7 Frontend Interfaces:

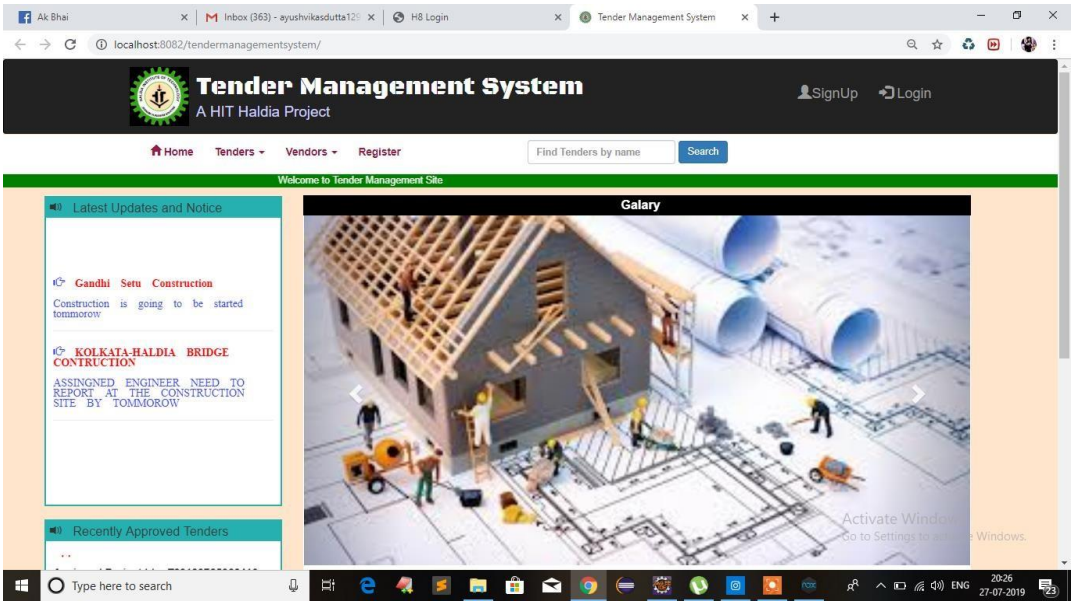

Figure 4.7.1 : Interface Page

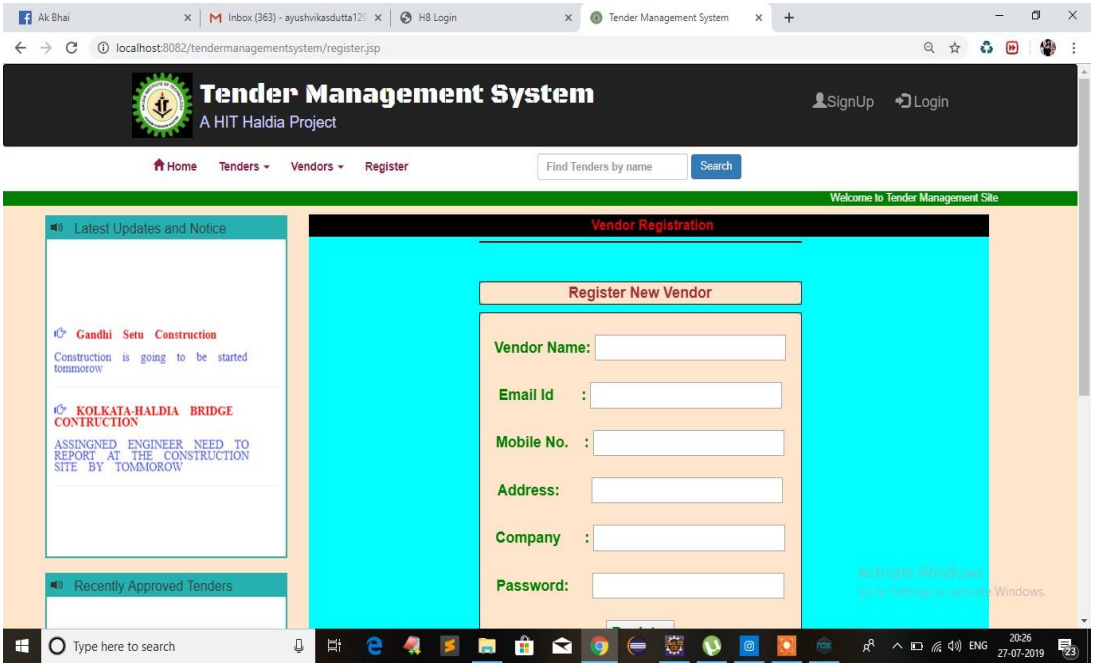

Figure 4.7.2: Register New Vendor

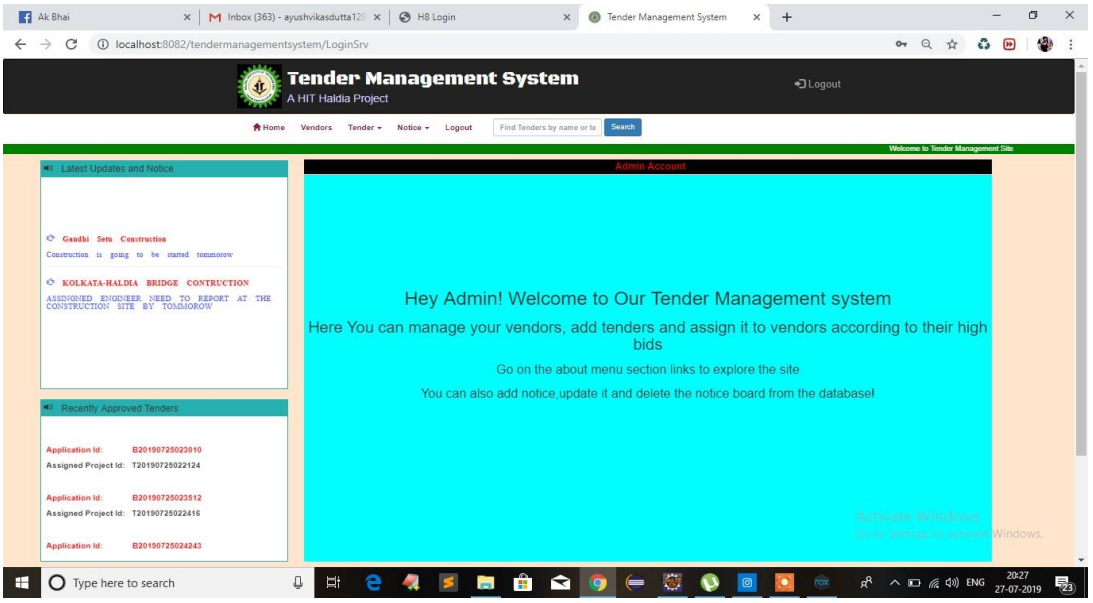

Figure 4.7.3: Admin Page

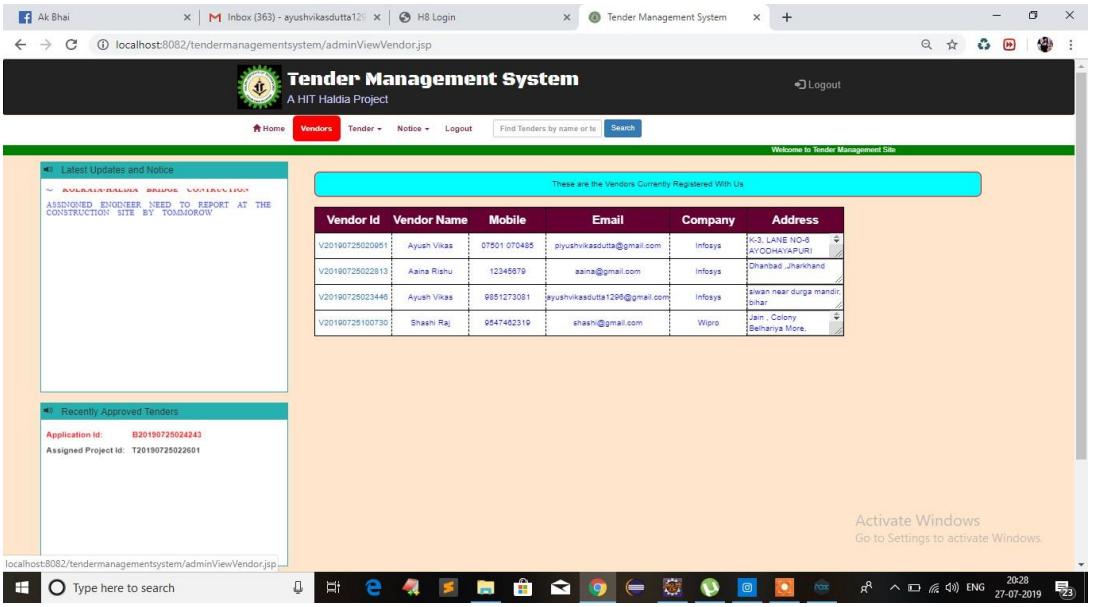

Figure 4.7.4: Currently Register

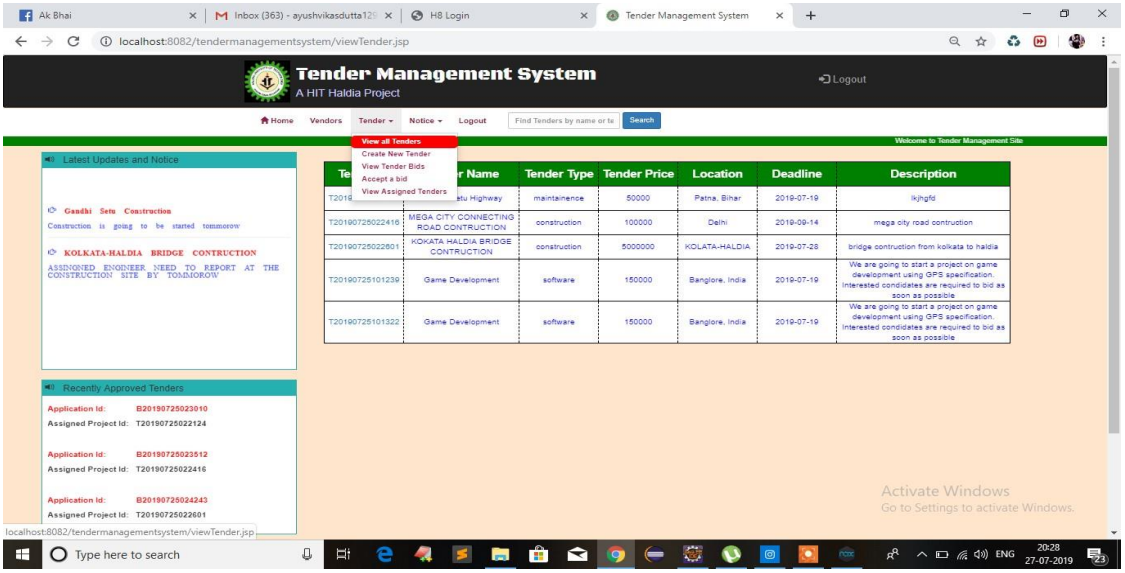

Figure 4.7.5: Tender Prices

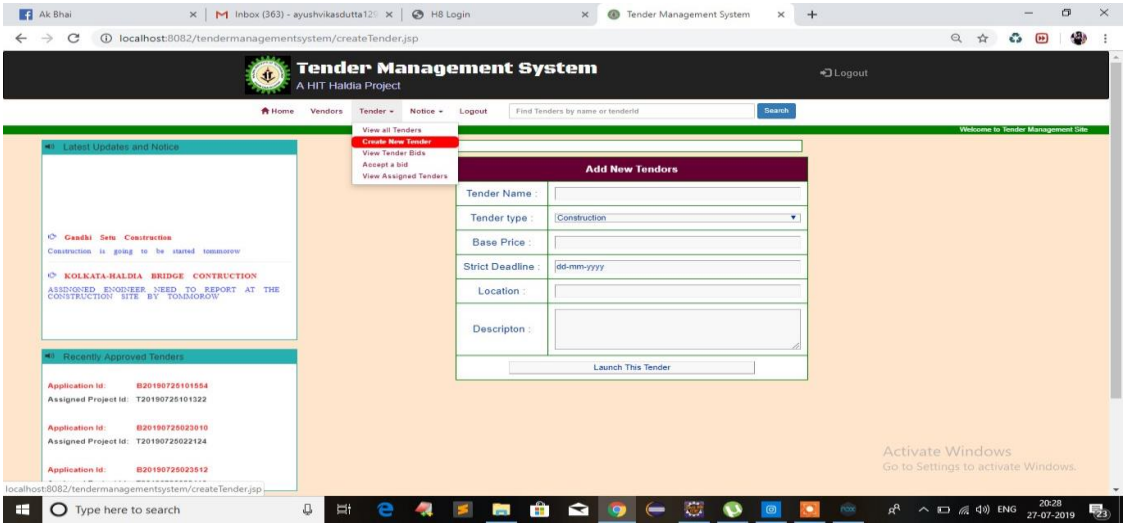

Figure 4.7.6: Launch Page

CHAPTER 5

FUTURE ENHANCEMENT

As technology continues to evolve, there are several opportunities to enhance the Tender Management System for better functionality, user experience, and efficiency. One of the key improvements could involve the integration of Artificial Intelligence (AI) and Machine Learning (ML) to streamline the tender evaluation process. AI algorithms can assist in automatic bid analysis, evaluating bids based on predefined criteria such as cost, timeline, and past performance. This would not only save time but also improve the accuracy and consistency of decisions. Additionally, implementing a predictive analytics feature could help identify trends and forecast potential issues, enabling users to make proactive decisions. Another potential enhancement is the introduction of a chatbot to assist users in navigating the system, answering frequently asked questions, and guiding them through the tendering process.

In the future, the ongoing enhancements to the system can cater to an increasingly diverse and global user base, ensuring that the platform remains relevant and effective in meeting the demands of modern businesses and governments. With improved user interfaces, faster processing, and innovative features, the Tender Management System will continue to simplify tender management, ultimately fostering a more competitive, fair, and efficient marketplace for all stakeholders.

CHAPTER 6
CONCLUSION

The Tender Management System serves as a crucial platform for streamlining and automating the tendering process, improving efficiency, and ensuring transparency throughout. By consolidating all tender-related activities, such as submission, evaluation, and award management, the system provides a centralized hub for both administrators and bidders. It reduces manual efforts, minimizes errors, and accelerates decision-making, ultimately benefiting both organizations and participants in the tendering process. As the system continues to evolve, integrating advanced technologies like AI, ML, Blockchain, and cloud-based solutions will only further enhance its capabilities, making it more secure, transparent, and scalable.

CHAPTER 7
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