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Development of an Online Building Estimate Process System (OBEPS) for Accurate Construction Cost Estimation

Ajitha.I[1], N Karthick[2]

Assistant Professor, Dr. N.G.P. Arts and Science College, Coimbatore, India[1]

III B.Sc., CT, Dr. N.G. P. Arts and Science College, Coimbatore, India[2]

ABSTRACT: The construction industry is plagued by cost overruns, delays, and inefficiencies, largely due to inaccurate cost estimation. To address this challenge, this research presents the development of an Online Building Estimate Process System (OBEPS), a web-based platform designed to simplify and streamline the building estimation process. OBEPS allows users to input project details and generate accurate estimates of construction costs, including materials, labor, equipment, and permits. The system utilizes a comprehensive database of construction costs, industry-standard estimation formulas, and advanced algorithms to provide reliable and up-to-date estimates. OBEPS also incorporates a user-friendly interface, robust reporting capabilities, and collaboration tools to facilitate communication among stakeholders. The platform is designed to benefit various stakeholders in the construction industry, including contractors, builders, architects, engineers, and homeowners. By providing accurate and timely cost estimates, OBEPS enables users to make informed decisions, reduce errors, and save time. The development of OBEPS involved a rigorous methodology, including literature reviews, expert interviews, and user surveys. The platform was tested and validated using real-world construction projects, demonstrating its accuracy, reliability, and usability.

I. INTRODUCTION

The Online Building Construction Material Booking System is developed to simplify the process of purchasing construction materials by providing a digital platform where customers can browse, compare, and book materials with ease. Traditionally, customers had to visit multiple stores to check the availability, pricing, and quality of essential construction materials such as bricks, sand, cement, wood, stone, and marble. This process was time-consuming and often resulted in inconvenience, especially if the desired material was out of stock. The system eliminates these challenges by offering a centralized online marketplace where users can access detailed product descriptions, vipricing, and place orders from the comfort of their homes or workplaces.

This project plays a crucial role in enhancing the efficiency of the construction industry by bridging the gap between customers and material suppliers. Users can search for specific materials based on their category, quality, and price, making informed decisions before placing an order.

II. WEB DEVELOPMENT PHASES

- User Management Module
- Material Management Module
- Order Management Module
- Engineer Profile Management Module
- Admin Management Module
- Customer Support Module

1. User Management Module

The **User Management Module** is responsible for handling the registration and login processes for customers. It allows users to register on the platform by entering essential information such as name, email, phone number, and address. After successful registration, users can log in with their credentials to access personalized features like searching for materials, viewing order history, and managing their profiles. This module ensures that only registered

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users can place orders or interact with other system features, providing a secure and organized system for both customers and administrators. It is also responsible for handling user authentication and maintaining the privacy and security of user data

2. Material Management Module

The **Material Management Module** enables the management of the construction materials available for sale on the platform. This module allows administrators to add new materials, update existing ones, and remove obsolete items from the inventory. Each material entry includes critical details such as name, description, price, availability, and category. The materials are organized into different categories (e.g., cement, bricks, wood) to make searching easier for customers. This module plays a vital role in ensuring that customers have access to accurate and up-to-date information on the materials they wish to purchase. It also allows customers to view and compare different materials based on their specifications and prices

3. Order Management Module

The **Order Management Module** handles all aspects of customer orders, from the initial request to final delivery. Once a customer selects the materials they wish to purchase, they can input the required quantity and specify the delivery address and preferred delivery date. The system then processes the order, calculates the total cost, and confirms the booking with a unique order ID. This module tracks the status of each order, updating customers on its progress (e.g., pending, dispatched, delivered). It also handles cancellations and modifications to existing orders. By providing an organized workflow for orders, this module ensures smooth transaction processing and timely delivery of materials to customers.

4. Engineer Profile Management Module

The **Engineer Profile Management Module** allows engineers or construction professionals to create and update their profiles, which are made accessible to customers on the platform. Engineers can input their qualifications, experience, contact details, and areas of expertise. This helps customers assess whether an engineer is suitable for their specific construction project. The system allows customers to search for engineers based on their specialization, experience, and availability. This module ensures that customers can easily connect with qualified professionals, fostering transparency and trust in the services offered through the platform. It also provides engineers with an organized space to manage their professional profiles and availability.

5. Admin Management Module

The **Admin Management Module** is the core administrative control point of the system. It allows administrators to manage the overall functioning of the platform, including overseeing user registrations, material listings, orders, and customer inquiries. Administrators have the ability to add, update, or delete materials in the inventory, approve or reject customer profiles, and track the status of orders. This module also gives admins the ability to generate reports, monitor system performance, and ensure smooth communication between customers and the platform. The admin role is crucial in maintaining the integrity and efficiency of the platform, ensuring that everything operates according to predefined guidelines.

6. Customer Support Module

The **Customer Support Module** is designed to handle customer inquiries, complaints, and issues related to their orders. It allows users to submit tickets describing their concerns or requests, such as problems with deliveries or material quality. The module organizes customer support tickets by priority, and staff members can respond to each issue in a timely manner. This system ensures that customers receive the necessary assistance for any issues they face during the booking or delivery process. The module is essential for providing a positive user experience, ensuring that customers feel heard and supported throughout their journey on the platform.

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III. BLOCK DIAGRAM:

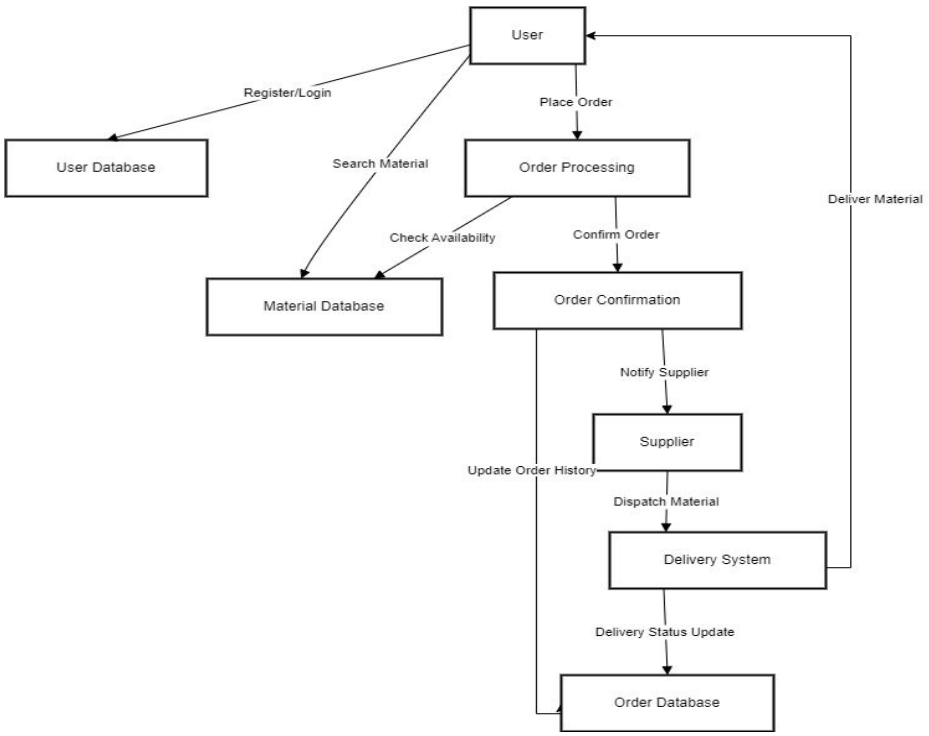

Figure 1: Block Diagram.

OUTPUT DESIGN:

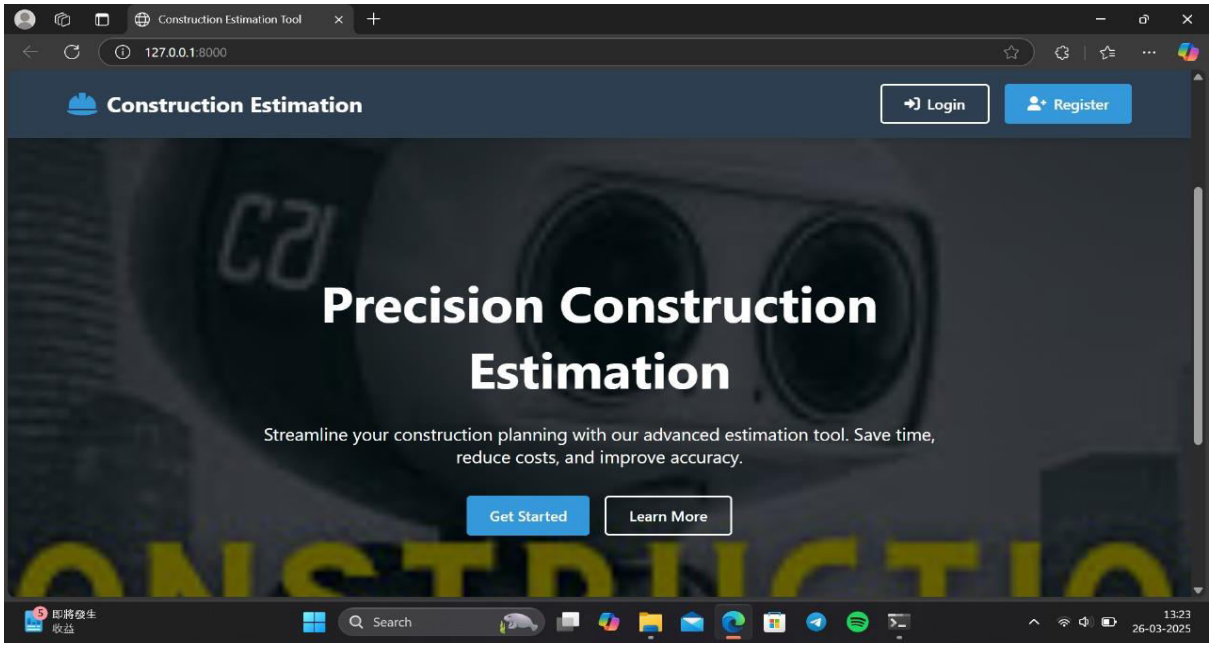

Figure 5.1: Home Page.

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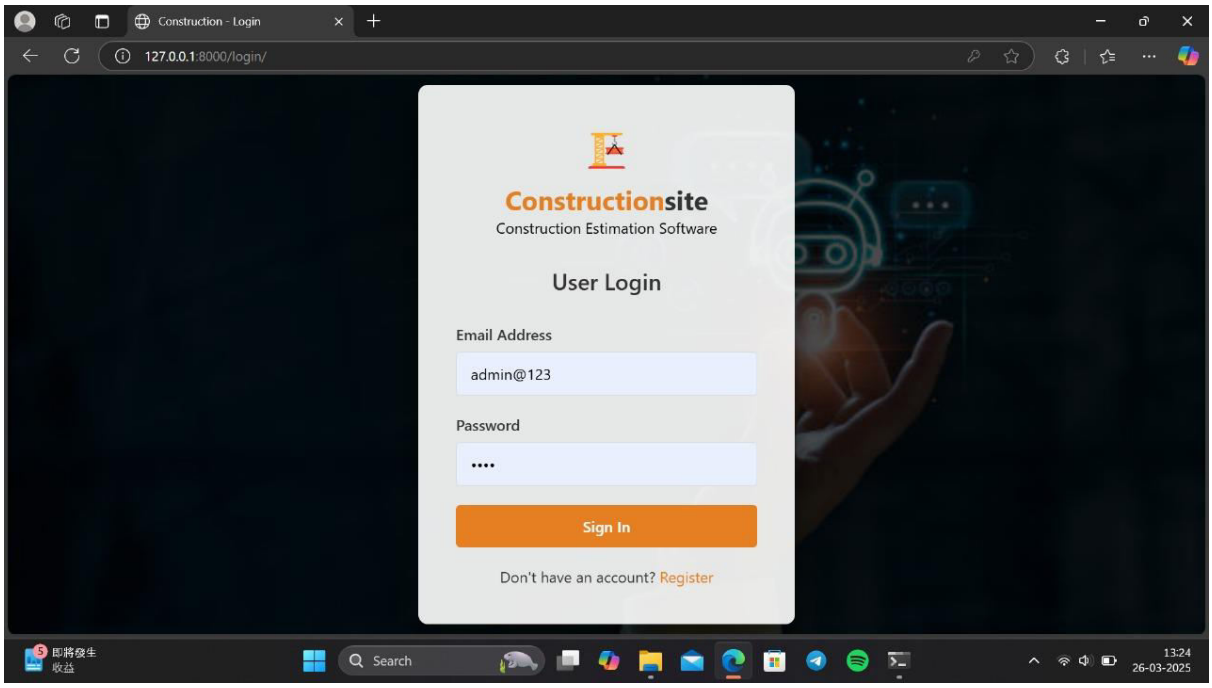

Figure 5.2: Signup Page.

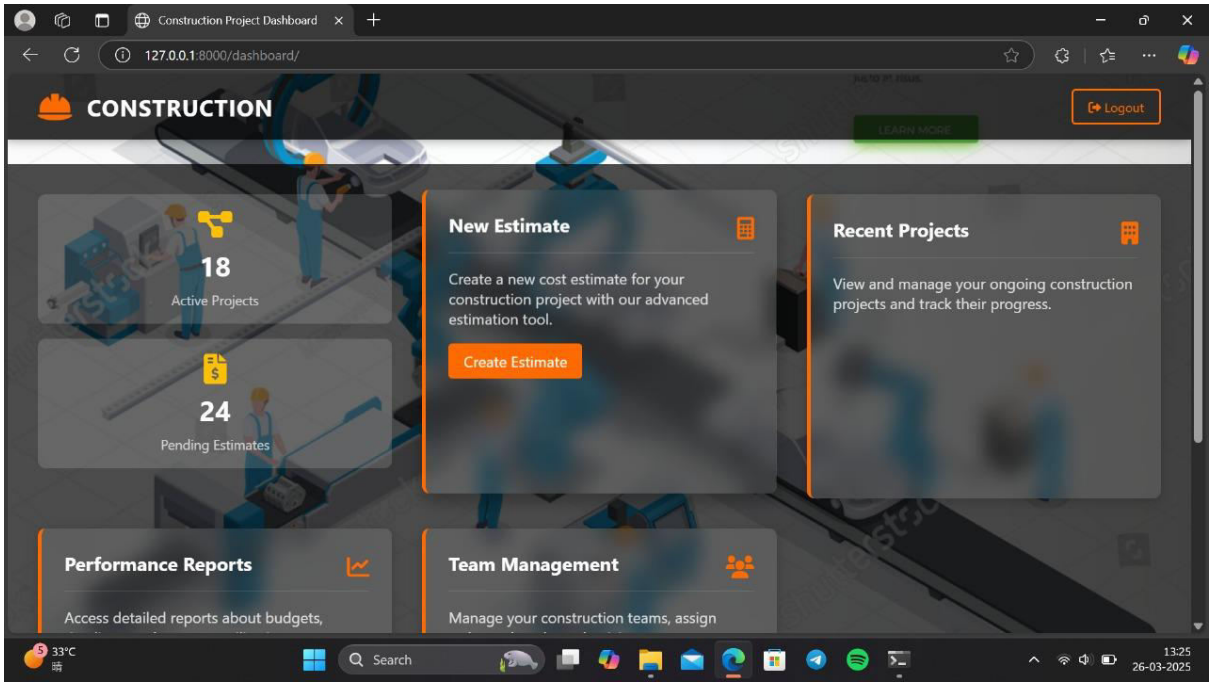

Figure 5.3: Estimate Page

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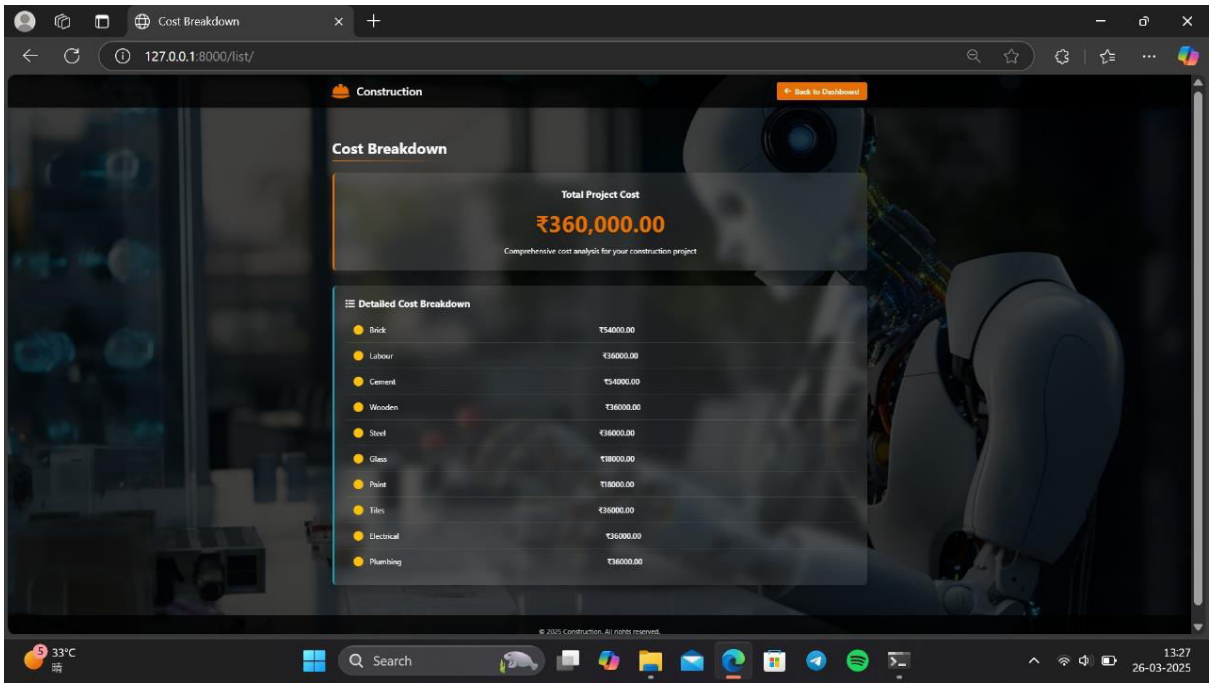

Figure 5.4: Final Output.

IV. CONCLUSION:

The Online Building Construction Material Booking System is a modern and efficient solution designed to simplify the process of purchasing construction materials. Traditionally, customers had to visit multiple stores physically to check material availability, compare prices, and place orders, which was time-consuming and often resulted in inconvenience. This system overcomes these challenges by providing a digital platform where users can browse, search, and book materials from the comfort of their homes or workplaces. By integrating essential functionalities such as user authentication, material management, order processing, and engineer profile management, the system ensures that both customers and suppliers benefit from a seamless and well-organized process.

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