E-COMMERCE FURNITURE WEBSITE USING AR TECHNOLOGY

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ABSTRACT:
The furniture sector has changed significantly as a result of e-commerce’s explosive growth. This extensive project explores the creation and evaluation of a cutting-edge online furniture store. In this paper, we propose a website "E-commerce Furniture Website Using AR Technology" makes moderately cost, high-quality furniture more accessible to rural populations. By using this platform providing some special offer products especially for women’s for giving them business opportunities. The paper goes into detail on some of the main aspects of the e-commerce platform, including an intelligent recommendation engine, augmented reality integration, and a 3D product visualization tool. This research explores the impact of AR integration on user engagement, conversion rates, and overall customer satisfaction, highlighting the potential of this technology to revolutionize the way consumers shop for furniture online.

Keywords: E-Commerce, furniture, integration tool, Customer satisfaction, user platform.

I. INTRODUCTION:
E-Commerce Furniture Website is like virtual furniture store on the internet. It has pictures and descriptions of all kinds of furniture from sofas and chairs to beds and tables. You can pick what you like, pay for it online, and have it delivered to your doorstep. These websites have changed the way we buy furniture. They make it easy for us to find the furniture we want, whether we live in a big city or a small town. But there's more to it than just shopping online. We'll also explore how this website use technology to make our furniture shopping experience better, like showing us how a new couch would look in our living room before we buy it using AR technology. In rural areas economic opportunities for women have often been limited, with traditional roles and barriers hindering their financial independence. Therefore, using E-Commerce Furniture Website providing business opportunities for women’s by offering special offer products. Unlocking their entrepreneurial potential and fostering inclusive economic development.

II. AIM AND OBJECTIVES:
Deliver a robust and user-friendly e-commerce furniture platform, augmented with cutting-edge AR technology, to empower retailers. The system will be able to achieve the following objectives:

1. To develop user-friendly E-commerce platform.
2. To enable customers to visualize furniture in their own space.
3. To provide robust inventory management to retailer.
4. To provide marketing support to retailer.

III. EXISTING SYSTEM:
The existing system of the e-commerce furniture website is a sophisticated technological infrastructure focused on delivering a seamless and secure online shopping experience. It has been designed to adapt to changing market demands, emphasizing continuous improvements and updates. This system likely incorporates features such as product listings, detailed descriptions, high-quality images, secure payment gateways, and efficient order processing. The platform's success hinges on its ability to stay current with technological advancements, user preferences, and market trends, ensuring it remains competitive and
appealing to customers. Regular updates and adaptations are crucial to sustaining its effectiveness and enhancing user satisfaction in the ever-evolving e-commerce landscape.

IV. PROPOSED SYSTEM:

The proposed system is an e-commerce furniture website, an online platform dedicated to buying and selling furniture and home decor products. This digital marketplace aims to streamline the process of purchasing furniture items such as sofas, chairs, tables, cabinets, and more. Users can browse through an extensive catalog of products, access detailed information, view images, and make secure online transactions. The website provides a user-friendly interface, enabling customers to easily search, compare, and select furniture items according to their preferences. By offering a diverse range of products and ensuring a seamless shopping experience, the proposed e-commerce furniture website aims to cater to the needs of consumers looking to furnish their homes conveniently and efficiently.

Flow Chart Diagram.
Use case Diagram for E-commerce furniture website is as given:

Class Diagram for E-commerce furniture website is as given:

Class Diagram
V. METHODOLOGY:

Development Environment Setup:
Explain how the development environment was set up for both the backend (Spring Boot) and frontend (Angular) development. Discuss:
- Development Tools: Mention the IDEs (Integrated Development Environments) used for coding version control systems (like Git), and collaboration tools (such as GitHub, GitLab).
- Dependency Management: Describe how dependencies for the project were managed. For example, in Java, tools like Maven or Gradle are commonly used for dependency management.
- Project Structure: Discuss the folder structure of the project, organizing backend and frontend code, configuration files, and assets.

Backend Development (Spring Boot):
Discuss the backend development process in detail:
- Architecture: Explain the architecture pattern used (e.g., MVC - Model-View-Controller) and justify the choice. Describe how different components interact with each other.
- API Design: Discuss the design of RESTful API endpoints. Describe each endpoint's purpose, the HTTP methods used, and the expected request and response formats.
- Data Management: Explain the data model used for storing furniture products and user information. Discuss the choice of database technology (e.g., MySQL, PostgreSQL) and justify it based on project requirements.
- Security Measures: Describe the security features implemented, such as user authentication (JWT tokens, OAuth) and authorization mechanisms. Explain how user data and transactions are secured.

Frontend Development (Angular):
Discuss the frontend development process in detail:
- Application Structure: Explain the structure of the Angular application, including components, services, modules, and routing configurations. Discuss how the application is organized for modularity and reusability.
- API Integration: Describe how the frontend communicates with the backend through API calls. Explain how data received from API endpoints is displayed to users.
- User Interface Design: Discuss the user interface design principles applied, including navigation menus, product listing, search functionality, and checkout process. Mention any UI frameworks or libraries used (e.g., Bootstrap, Material Design) for a consistent and responsive UI.
- User Experience (UX) Considerations: Explain how user experience was prioritized, including responsive design for various devices (desktops, tablets, mobiles) and considerations for accessibility.

Testing:
Discuss the testing methodologies used for both backend and frontend components:
- Unit Testing: Explain how individual components, functions, and methods were tested in isolation to ensure they work as intended.
- Integration Testing: Describe how different components were tested together to identify issues arising from their interactions.
- End-to-End Testing: Discuss the testing of complete user workflows, such as product search, adding items to the cart, and checkout processes, to ensure the entire system functions seamlessly.

Performance Evaluation:
Discuss how the performance of the website was evaluated and optimized:
- Performance Metrics: Explain the performance metrics monitored, such as response time, loading speed, and server resource utilization.
- Optimization Techniques: Describe any optimization techniques implemented, such as caching mechanisms, lazy loading of assets, and code splitting to enhance the website's speed and responsiveness.
VI. SYSTEM IMPLEMENTATION:

This paper represents the admin management system and user shopping website. It helps to manage products and analyzing the sales report. User can easily buy products from anywhere through this website.

The following is a view of the proposed E-commerce Furniture website owned by Life Time Furniture.
3D View of Products Using AR

Admin Dashboard Page

Product Management Page
VII. CONCLUSION:

E-commerce furniture websites integrating Augmented Reality (AR) have transformed online shopping into an immersive, lifelike experience. With AR, customers can visualize furniture in their own homes, facilitating confident purchase decisions. This virtual 'try before you buy' approach eliminates uncertainties, enhances spatial perception, and reduces the likelihood of returns. By bridging the gap between online and in-store shopping, AR technology significantly boosts customer satisfaction, making the entire shopping process more interactive, engaging, and ultimately, more enjoyable for consumers.

VIII. ACKNOWLEDGMENT:

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IX. REFERENCES: