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Furniture E-Commerce Web Application

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ABSTRACT In today's fast-changing business environment, it's extremely important to be able to respond to client needs in the most effective and timely manner. If your customers wish to see your business online and have instant access to your products or services. Online Shopping is a lifestyle e-commerce web application, which retails various fashion and lifestyle products (Currently Furniture products). This project allows viewing various products available enables registered users to purchase desired products instantly using PayPal payment processor (Instant Pay) and also can place order by using Cash on Delivery (Pay Later) option. This project provides an easy access to Administrators and Managers to view orders placed using Pay Later and Instant Pay options.

In order to develop a furniture e-commerce website, a number of Technologies must be studied and understood. These include multi-tiered architecture, server and client-side scripting techniques, implementation technologies such as Angular 6 by front end, programming language (such as java) and relational databases. This is a project with the objective to develop a basic website where a consumer is provided with a shopping cart application and also to know about the technologies used to develop such an application.

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

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I. INTRODUCTION:

Furniture E-commerce is fast gaining ground as an accepted and used business paradigm. More and more business houses are implementing web sites providing functionality for performing commercial transactions over the web.

It is reasonable to say that the process of shopping on the web is becoming commonplace. The objective of this project is to develop a general-purpose e-commerce store where product like clothes can be bought from the comfort of home through the Internet. However, for impel mentation purposes, this paper will deal with an online shopping for clothes.

An online store is a virtual store on the Internet where customers can browse the catalogue and select products of interest. The selected items may be collected in a shopping cart. At checkout time, the items in the shopping cart will be presented as an order. At that time, more information will be needed to complete the transaction.

Usually, the customer will be asked to fill or select a billing address, a shipping address, a shipping option, and payment information such as credit card number. An e-mail notification is sent to the customer as soon as the order is placed.

The objective of this project is to develop a general-purpose e-commerce store that enables users to browse and purchase products from the comfort of their homes. While the primary focus of this research is on developing an online store for clothes, the same principles and methodologies can be extended to other retail sectors, such as electronics, furniture, and groceries.

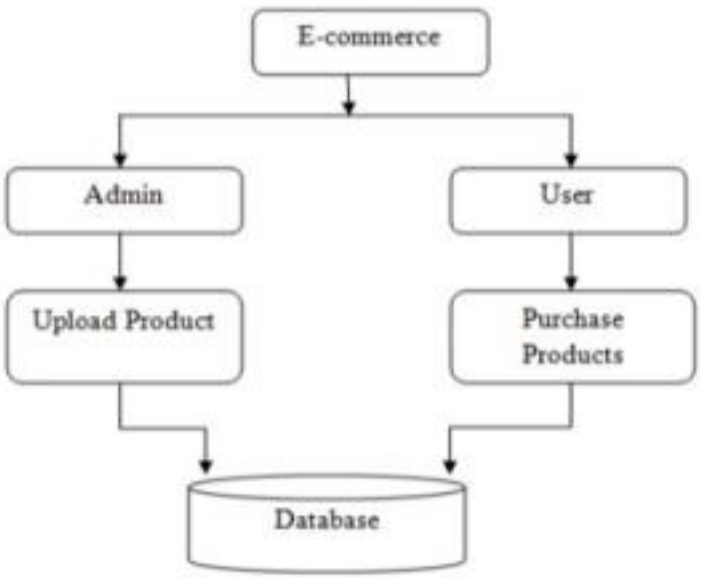

Figure 1. Furniture E-Commerce Web Application Architecture

II. Literature Survey

E-commerce has changed the way people shop by making it easier to buy products online. In recent years, furniture e-commerce has become more popular because of convenience, wide product choices, and secure payment options. Customers can now browse furniture collections, compare prices, and place orders without visiting a physical store. However, there are still some challenges, such as high delivery costs, difficulty in checking product quality before buying, and complicated return policies.

To build a successful online furniture store, different technologies are used. Angular 6 is commonly used for the frontend to create a smooth and interactive user experience. The backend is managed using Spring MVC, which helps in handling orders, payments, and

security efficiently. MySQL is used as the database to store product details, customer orders, and transaction history. These technologies work together to ensure a fast, secure, and user-friendly shopping experience.

Security is an important part of any e-commerce platform because customers share personal details and make online payments. To keep their information safe, security features like JWT authentication, OAuth, and SSL encryption are used. Additionally, role-based access control (RBAC) ensures that only authorized users can access sensitive data. Despite these security measures, threats like hacking and data breaches are still challenges that need to be managed.

While online furniture shopping is growing, it faces some unique problems. Delivering furniture is more expensive than delivering smaller products like clothes or electronics. Customers often want to see and feel furniture before buying, which makes online shopping less attractive. Also, returning large furniture items is costly and difficult, leading to customer dissatisfaction.

To solve these problems, new technologies like AI, Augmented Reality (AR), and blockchain are being introduced. AI-based recommendation systems suggest products based on customer preferences. AR technology allows users to visualize how furniture will look in their homes before buying, reducing uncertainty. Blockchain helps in making online payments more secure and improving supply chain transparency.

In conclusion, furniture e-commerce is growing, and businesses are using modern web technologies and AI-driven tools to improve customer experience. Future improvements should focus on better delivery systems, increasing customer trust, and using innovative technologies like AR and blockchain to make online furniture shopping more reliable and efficient.

III. Proposed Methodology

Furniture e-commerce is becoming more popular as businesses shift from traditional stores to online platforms. The purpose of this study is to develop a web-based furniture e-commerce platform where users can browse, purchase, and track their orders online. The increasing demand for online shopping has encouraged businesses to adopt secure and scalable web technologies to provide a better user experience. This project focuses on using Angular for the frontend, Spring MVC for the backend, and MySQL for database management. Security is a key concern in online shopping, so the platform integrates SSL encryption, secure payment methods (PayPal and Cash on Delivery), and authentication systems (JWT and OAuth) to ensure safe transactions. The design also prioritizes a fast, mobile-friendly, and user friendly interface to improve customer satisfaction.

The development of the platform follows the Software Development Life Cycle (SDLC) to ensure an organized and efficient process. The first step is requirement analysis, where key features such as product browsing, shopping cart, and order tracking are identified. Next, the system design phase involves creating the database structure and user interface. The implementation phase includes coding the frontend using Angular 7, the backend using Spring MVC & Hibernate, and integrating MySQL for storing customer and product data. After development, the system undergoes testing and debugging, which includes unit testing, security testing, and performance testing to ensure smooth operation. Finally, the platform is deployed and maintained, with continuous improvements based on user feedback.

Data management is an essential part of the system, with a structured database storing details about users, products, and orders. The Users Table keeps customer and admin information, while the Product Table manages furniture details, pricing, and images. The Order Table tracks customer purchases, payments, and delivery status. To protect customer information, the system implements secure authentication with JWT & OAuth, role-based access control (RBAC) to limit admin and customer permissions, and SSL encryption for safe transactions. In conclusion, this research aims to develop a secure, scalable, and user-friendly furniture e-commerce platform. By using modern web technologies and strong security measures, the project ensures a smooth and safe online shopping experience for users. Future improvements may include AI-based recommendations, augmented reality for virtual furniture placement, and blockchain for enhanced transaction security.

IV. Results and Discussion

4.1. Webpage- Furniture E-Commerce Web Application

The development and implementation of the Furniture E-Commerce Web Application successfully achieved its primary objectives. The platform provided a user-friendly shopping experience, allowing customers to easily browse, select, and purchase furniture online. The website's design ensured smooth navigation, with clear product categories, a responsive interface, and an intuitive shopping cart system.

Performance testing showed that the website handled multiple users efficiently, maintaining fast loading times and secure transactions. The integration of PayPal and Cash on Delivery (COD) payment options allowed customers to choose their preferred mode of payment. Additionally, the admin panel enabled business owners to manage products, track orders, and update inventory seamlessly.

Security measures, including SSL encryption and role-based access control (RBAC), were successfully implemented to protect user data. The database system, developed using MySQL, efficiently managed product details, user information, and transaction records without data loss or inconsistencies.

The following figure 2 of the system's interface, showing home page Furniture E-Commerce Web Application has shown below.

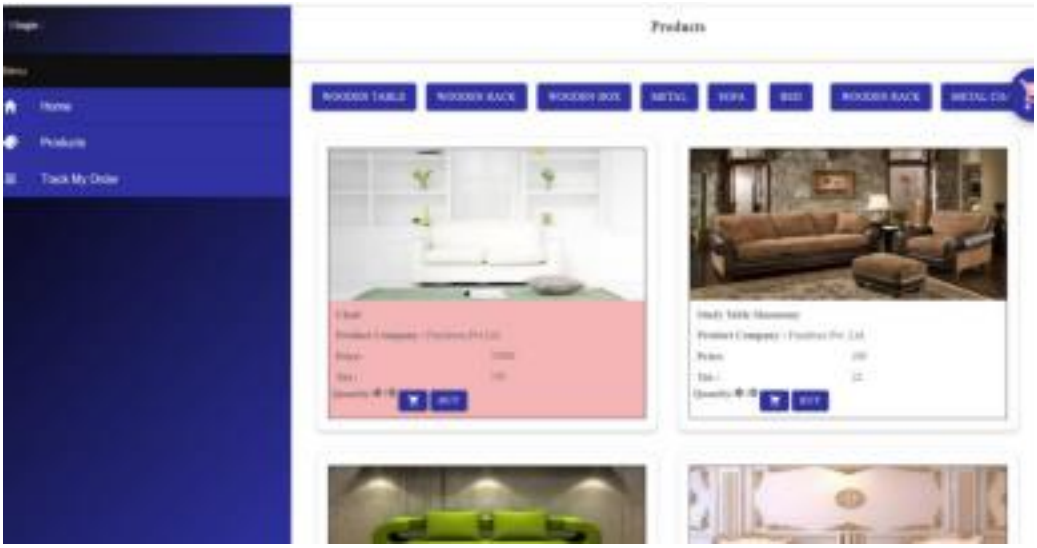

Figure 2. Home page of our web application

2. Table 1. Comparative Analysis of Furniture E-Commerce and Traditional Furniture Stores**.**

Feature	**E-commerce Furniture Website**	**Traditional Furniture Store**
Convenience	Available 24/7, shop from anywhere	Requires visiting the physical store
Variety	Wide range of products from multiple brands	Limited selection based on store size

Price	Often lower due to fewer overhead costs	Higher due to rent and operational costs
Customization	Some websites offer customization options	More interactive customization with physical samples
Delivery	Home delivery, may take time	Immediate pickup or scheduled delivery
Return Policy	Returnable within a specified period	Returns may be limited or not allowed
Quality Check	Cannot physically inspect before buying	Can check quality, comfort, and material
Customer Service	Chatbots, emails, and call support	Face-to-face interaction with staff
Payment Options	Online payments, EMI, COD	Cash, card, financing options available

4.2. Discussion

The results show that both e-commerce and traditional furniture stores have their own advantages and challenges. E-commerce platforms offer convenience, variety, and competitive pricing, making them attractive to modern consumers. However, challenges like return policies, trust issues, and delivery costs can affect customer satisfaction. On the other hand, traditional stores provide a personal shopping experience and immediate product availability, but their reach is limited, and operational costs are high. To stay competitive, businesses can adopt a hybrid model, combining an online presence with physical showrooms, offering the best of both worlds.

V. Conclusion and Future Scope

Conclusion The comparison between furniture e-commerce and traditional stores highlights the strengths and challenges of both business models. E-commerce platforms provide a vast market reach, lower operational costs, and enhanced convenience for customers. However, they face challenges such as trust issues, high return rates, and logistical complexities. On the other hand, traditional furniture stores offer a personalized shopping experience, immediate product availability, and stronger customer trust but are limited by geographical reach and higher overhead costs. A hybrid approach, combining both online and physical stores, can help

businesses maximize their strengths and address weaknesses.

Future Scope The future of furniture retail lies in a blend of technology and customer-centric strategies. Advancements in augmented reality (AR) and virtual reality (VR) can enhance online shopping experiences by allowing customers to visualize furniture in their spaces before purchasing. AI-driven recommendation systems can personalize shopping experiences, increasing customer satisfaction. Additionally, improvements in logistics and supply chain management can make e-commerce more efficient. Traditional stores can leverage digital tools to enhance in-store experiences, such as interactive kiosks and real-time inventory tracking. The integration of sustainable materials and eco-friendly practices in both online and offline models will also shape the future of furniture retail.

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