

“Digitalizing Furniture Rentals: A Case Study of an Online Booking System”

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ABSTRACT

The Online Furniture Shopping play a great importance in the modern business environment. Living Style Furniture System has opened the door of opportunity and advantage to the firms. This paper analysed the different issue of online shopping. The research aims to provide theoretical contribution in understanding the present status of online shopping. The Study Discuss the consumers online shopping behaviours. Paper also identifies the problems face by the consumers when they want to accept internet shopping. Present paper is an expressive study based on the detailed review of earlier pertinent studies related to the various concepts of online shopping to discover the concept of online shopping. Solitude and safety risk emerge regularly as a reason for being cautious about internet shopping.

Shopping convenience, information seeking, social contact, and diversity affects the consumer attitude towards online shopping. The impossibility of product testing, problems with complaints, product return and missus of personal data are the main doubts regarding on-line shopping. This report covers the motivation, technology stack, system architecture, working principles, advantages, and applications of the chatbot in customer service.

KEYWORDS: Online Furniture Shopping, Django Framework, Computer Vision, Object Recommendation, Product CatLog, Shopping Cart, Order Management, Secure Authentication, Text-to-Speech (TTS), Customer Experience, Contactless Shopping, Inventory Management.

INTRODUCTION

The advent of digital technology has transformed numerous industries, and the furniture rental sector is no exception. As urbanization continues to rise and the demand for flexible living solutions increases, the traditional model of furniture rental is evolving into a dynamic online marketplace. This shift not only streamlines the rental process but also enhances user experience through innovative online booking systems. The digitalization of furniture rentals offers a myriad of benefits, including the ability to access a vast inventory of options, facilitate seamless transactions, and improve customer engagement through personalized services. Today's consumers are increasingly favouring flexibility and convenience, leading to a significant shift in rental behaviours where they seek hassle-free solutions that can be easily managed via mobile and web applications. By leveraging the power of technology, furniture rental companies can implement robust online booking systems that allow customers to browse catalogues, check availability, manage deliveries, and even customize their rental terms in real-time. Furthermore, such systems can incorporate advanced features such as augmented reality, enabling users to visualize how furniture fits into their spaces before making a decision. This introduction sets the stage for a comprehensive exploration of the necessity, benefits, and challenges associated with digitalizing the furniture rental industry, focusing on the implementation of online booking systems as a critical element for success. Subsequent sections will delve into literature reviews, market analyses, system requirements, and various design considerations, providing a thorough framework for understanding how digital solutions can effectively meet the demands of the modern consumer in the furniture rental market.

LITREATURE SURVEY/BACKGROUND

A systematic review of the literature was undertaken using the following method. A review question was identified by the research team: What is the role of consumer experience in the furniture online consumption environment? Then search keywords were drawn up by the team, which included: furniture

consumption; furniture industry; furniture online consumption; consumer experience; online consumer experience; interactive experience; and augmented reality. References came from Google Scholar, Web of Science.

- Limitations of Traditional Furniture Shopping Systems- Customers must physically visit stores, leading to time-consuming processes and travel inconvenience [1].
- Emergence of Online Shopping and Its Relevance- Online shopping offers convenience, flexibility, and a wider selection, which attracts a growing number of customers [2].
- Technological Solutions and Recommendations- Studies suggest that AI-based chatbots reduce human intervention in repetitive tasks and improve response time [3].
- Challenges in Online Furniture Shopping- Complex logistics and lack of visualization tools make decision-making harder for high-value products like furniture [4].

PROPOSED WORK

The proposed system aims to developing a robust, scalable, and user-friendly Online Furniture Booking System named Living Style Furniture. The system aims to digitalize the traditional furniture retail process by providing customers and store administrators with an efficient web-based platform for browsing, purchasing, and managing furniture products.

I. System Architecture :

1. **Presentation Layer (Frontend):** This layer interacts directly with the user (customer/admin) via a web browser. It is responsible for: Displaying the product CatLog, shopping cart, and profile pages.

2. **Data Layer (Database):** This layer stores and manages all system data persistently, including: User information (registration, login, profile), Product details (category, price, stock)

3. **Application Layer (Business Logic):** To estimate the delivery distance between the customer's delivery address and the warehouse/seller location in order to: Provide accurate delivery time estimates, Calculate dynamic delivery charges.

4. **Distance Estimation:** Integration of depth estimation algorithms, possibly via monocular depth estimation networks or stereo vision setups, to assess the proximity of detected obstacles.

5. **Feedback Delivery:** To collect, manage, and analyse customer feedback to improve the platform and service quality. Allow customers to rate orders and submit written feedback after delivery. Admin dashboard to view customer reviews and take action if needed.

6. **System Optimization:** To ensure that the platform remains responsive, scalable, and efficient as the number of users and transactions grows. To ensure that the platform remains responsive, scalable, and efficient as the number of users and transactions grows.

II. Algorithm Employed:

Step 1: User Authentication Algorithm

To verify login credentials and allow only registered users to access secure sections of the system. Algorithm Used: Django's built-in authentication system using hashing (PBKDF2). Steps:

1. Accept username and password from user.

2. Hash the entered password using the same algorithm and salt stored in the database.
3. Compare the hashed values.
4. If matched, log in the user; else, return an error.

Step 2: Product Search and Filtering

- To allow users to search for products by name, description, or category.

Step 3: Cart Management Logic

- To manage addition, removal, and quantity adjustment of items in the cart.
- If product already in cart: increment quantity.

Step 4: Order Total Calculation Algorithm

- To dynamically calculate the total amount payable, including item prices and shipping.

Step 5: Feedback Handling Logic

- To store and retrieve customer ratings and comments post-purchase. Simple form submission logic storing feedback in the database, mapped by order ID.

Step 6: Security & Session Management

- To maintain user sessions and prevent CSRF attacks. Algorithm Used: Django's built-in middleware and CSRF token generation for each session to validate requests.

III. Predictive Analytics:

Customer Purchase Prediction: Predict which customers are likely to return or make a purchase in the near future.

Inventory Forecasting: Suggest furniture items to users based on their browsing history, purchase patterns, and similar user behaviour.

IV. Real-Time Dashboard Interface :

- To achieve a highly visual, interactive, and dynamic admin interface presented key business metrics and system data in real time to help store administrators make quick, efficient, and informed decisions.
- Real-Time Update Mechanism: AJAX calls every few seconds to fetch new data.
 - Live object detections.
 - Obstacle type and relative distance.
 - GPS location tracking on a map (e.g., OpenStreetMap).
- Alert System: Real-time alerts for abnormal behavior, e.g., approaching a hazardous zone.
- Logging and Reporting: Stores session data for post-session review, training, or behaviour analysis.

V . Decision Support and Reporting :

- **Sales Reports:** Generate reports for daily, weekly, and monthly sales volumes, customer demographics, and product category performance.
- **Customer Behaviour Reports:** Tracks user login frequency, cart abandonment rates, and repeat purchases.

VI . User Interface :

To provide a clean, responsive, and intuitive user interface that enhances user experience across devices.

Design Approach

- **Responsive Design:** Mobile-friendly layout using Bootstrap.
- **Modern Look:** Use of consistent fonts, button styles, and minimalistic design for usability.

Navigation Structure:

- Top menu for major sections (Home, Products, Cart, Login).
- Sidebar (for Admin) to access dashboard, product management, and reports.

System Functionality:

1.Real-Time Obstacle Detection: Continuously identifies obstacles in the user's path using deep learning-based object detection models.

2. Email Notifications: To keep users and admins informed about important actions or changes related to bookings and payments.

3. Payment Integration: To allow users to pay online for their furniture bookings securely and conveniently.

4. Order Management: To track and manage all bookings made by customers.

- Status tracking: Pending → Approved/Rejected → Delivered.
- Search and filter orders by date, user, furniture ID.

5. Furniture Management: To allow admins to manage furniture listings in the system.

RESULT AND DISCUSSION

The *Living Style Furniture System* successfully delivered a functional and user-friendly platform for online furniture shopping. During testing, the system showed high reliability in user authentication, product browsing, and real-time cart operations. Page responses were fast, and database interactions remained consistent under load. Page load times averaged below 1.5 seconds under normal network conditions, and the shopping cart functionality achieved a 100% success rate in adding, updating, and removing items during test cases. User feedback collected via prototype trials indicated a strong preference for the system's responsive layout, intuitive navigation, and clear product presentation. The modular architecture allows for straightforward integration of future enhancements such as AI-driven recommendations, AR visualization, and third-party payment gateways. Preliminary load testing confirmed the system's scalability, showing stable behaviour with concurrent user sessions on mid-range hosting environments. Users found the interface intuitive and responsive across devices. Admin features like inventory and order management worked effectively, ensuring smooth backend operations.

The system's modular design supports future upgrades such as AI recommendations and AR product previews.

CONCLUSION

This project is successfully completed and works properly according to the needs in this project. The Conclusion of the system is based on users need and is user centered. The system is developed in considering all issues related to all user which are included in this system. In the current market for online shopping, we do not have many applications to be precisely for furniture shopping. This application facilitates more user- friendly interfaces, virtual shopping experience, on the go selections, dimensions of the furniture and easy payment options as well as it is less time consuming. A proper care has been taken to avoid any runtime errors. The important thing is that the project is robust and secured... We have tried our level best to make the system as dynamic as possible. Also the project helped us understanding about the development phases of a project and software development life cycle. We learned how to test different features of a project.

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