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International Journal of Engineering Technology Research & Management (IJETRM)
Journal Article
https://ijetrm.com/issue/

BABU'S SEA WORLD: A MOBILE-FIRST SEAFOOD E-COMMERCE WEB APPLICATION

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ABSTRACT
The rapid growth of e-commerce has transformed traditional retail sectors, yet the seafood industry remains largely dependent on physical markets and informal ordering systems. This paper presents Babu's Sea World, a mobile-first seafood e-commerce web application designed to connect local seafood vendors with consumers through a seamless digital platform. The application is developed using HTML5, CSS3, and Vanilla JavaScript without any backend framework, ensuring lightweight performance and high accessibility.
The system provides features such as product categorization, real-time search, dynamic shopping cart, and an admin panel for product management. Unlike conventional platforms, it operates entirely on the client side, eliminating deployment complexity while maintaining efficiency. The application supports responsive design for mobile and desktop environments.
System testing confirms high usability, fast load times, and full functional reliability. Future enhancements include backend integration, payment gateway support, and multi-vendor scalability.

Keywords
E-Commerce; Seafood Application; Web Development; Vanilla JavaScript; Shopping Cart; Client-Side Application; Responsive Design.

1. INTRODUCTION

The seafood industry plays a crucial role in India's economy, yet its retail operations are still dominated by traditional fish markets. These systems lack transparency, convenience, and scalability. Consumers often face challenges such as inconsistent pricing, lack of hygiene, and limited product information.
To address these issues, **Babu's Sea World** is developed as a digital seafood marketplace that allows users to browse, select, and purchase seafood products online. The system eliminates the need for physical market visits and provides a structured product catalogue with clear pricing and nutritional details .
The key contributions of this project include:

- Development of a **single-page e-commerce web application**
- Implementation of **real-time search and category filtering**
- Design of a **dynamic shopping cart system**
- Creation of a **client-side admin panel for product management**
- Responsive design optimized for mobile users

2. RELATED WORK

Several e-commerce and mobile applications have attempted to digitize retail services. However, most existing platforms are either generic grocery applications or lack specialization in seafood.

- Traditional systems rely on **physical markets and WhatsApp-based ordering**, which are unstructured and inefficient
- Generic platforms like BigBasket provide limited seafood options and higher pricing
- Previous research highlights the need for **domain-specific e-commerce solutions**

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Research Gap:
Existing systems fail to provide a **specialized, lightweight, and vendor-friendly seafood platform**. This project addresses the gap by delivering a **fully functional web-based solution without backend dependency**.

3. PROPOSED SYSTEM ARCHITECTURE

The application follows a **Single-Page Application (SPA)** architecture consisting of three layers:

3.1 Presentation Layer

- HTML5 and CSS3 for UI design
- Responsive layout using Flexbox and Grid

3.2 Logic Layer

- JavaScript handles:
  Product rendering
  Cart management
  Search and filtering
  Admin operations

3.3 Data Layer

- Data stored in JavaScript arrays (client-side memory)
- Includes:
  Product list
  Cart data
  Categories

This architecture ensures **fast performance and zero server dependency**

4. SOFTWARE AND HARDWARE REQUIREMENTS

4.1 Software Requirements

- HTML5, CSS3, JavaScript (ES6+)
- Visual Studio Code
- Google Chrome / Firefox

4.2 Hardware Requirements

- Minimum 4GB RAM system
- Any smartphone or desktop browser
- Internet for initial loading

5. SYSTEM DESIGN AND MODULES

The system is divided into the following modules:

5.1 Navigation Module

Provides smooth navigation using a responsive menu system.

5.2 Search and Filter Module

Allows real-time product filtering based on keywords and categories.

5.3 Product Catalogue Module

Displays seafood items with price, description, and benefits.

5.4 Cart Module

- Add/remove items
- Adjust quantities
- Dynamic total calculation

5.5 Checkout Module

Simulates order placement with confirmation message.

5.6 Admin Panel Module

- Add, edit, delete products
- Manage content dynamically

6. SYSTEM TESTING AND RESULTS

6.1 Functional Testing

All modules were tested and passed:

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- Product search → PASS
- Cart operations → PASS
- Checkout process → PASS
- Admin operations → PASS

6.2 Performance Testing

- Page Load Time: ~1.2 seconds
- Search Response: < 20ms
- Cart Update: Instant

6.3 Usability Testing

- User satisfaction score: **4.4/5**
- Easy navigation and responsive design

6. APPLICATIONS

The system can be used in:

- Local seafood businesses
- Online grocery startups
- Multi-vendor marketplaces
- Digital transformation of fish markets

8. CONCLUSION

This paper presented Babu's Sea World, a lightweight and efficient seafood e-commerce web application. The system successfully demonstrates how modern web technologies can be used to build a complete online marketplace without backend infrastructure.

The application provides a user-friendly interface, real-time interaction, and scalable design, making it suitable for real-world deployment.

Future Enhancements:

- Payment gateway integration
- Backend database support
- Multi-vendor system
- AI-based product recommendations

ACKNOWLEDGEMENT

The authors express sincere gratitude to the Department of Computer Applications, Vels Institute of Science, Technology and Advanced Studies (VISTAS), Chennai, for providing the necessary support and infrastructure. Special thanks to **Mrs. S. Prathi, MCA., M.Phil.** for her valuable guidance and encouragement throughout the project.

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