



International Journal of Innovative Research in Science Engineering and Technology (IJIRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)



Impact Factor: 8.699

Volume 14, Issue 4, April 2025

A Smart and Efficient Digital Marketplace for Modern Buyers

Dr. V. Geetha¹, K. Sailendra Bharadwaj², V. Niranjana³

Asst. Professor, Department of CSE, SCSVMV University, Kanchipuram, India¹

B. E, Department of CSE, SCSVMV University, Kanchipuram, India^{2,3}

ABSTRACT: Contemporary digital transformation has positioned electronic commerce as a cornerstone of modern consumer ecosystems. The proposed platform, 'A Smart and Efficient Digital Marketplace for Modern Buyers,' is engineered to deliver a frictionless shopping environment characterized by an intuitive interface and multifunctional capabilities. Advanced computational architectures are integrated to optimize transactional workflows, machine learning-driven personalization algorithms, and cryptographically secure payment gateways. The system employs a responsive design philosophy, enabling effortless product navigation, comparative analysis, and purchase execution. Real-time stock monitoring systems coexist with semantic search optimization and neural recommendation networks, collectively elevating user engagement metrics. Furthermore, the architecture implements military-grade encryption standards alongside adaptive authentication layers to preserve data integrity and foster consumer confidence. This initiative seeks to architect a symbiotic commercial ecosystem through scalable infrastructural solutions.

KEYWORDS: eCommerce, Digital Marketplace, AI-driven Recommendations, Secure Transactions, Online Shopping, Inventory Management

I. INTRODUCTION

The evolution of digital commerce has fundamentally altered consumer purchasing behaviors and organizational operational paradigms. Conventional retail methodologies frequently exhibit deficiencies in operational efficiency, spatial-temporal accessibility, and ergonomic design, factors driving accelerated adoption of virtual commercial platforms. Nevertheless, persistent limitations in conventional platforms, including suboptimal user experience design, cybersecurity vulnerabilities, and inadequate search efficiency, continue to impede market potential. This research delineates the architectural framework of 'A Smart and Efficient Digital Marketplace for Modern Buyers,' proposing a paradigm shift enabled by three core innovations: adaptive interface optimization, predictive analytics integration, and quantum-resistant security protocols. A pivotal advancement. One that redefines stakeholder interactions through computational empathy and algorithmic transparency.

II. LITERATURE SURVEY

Recent advancements in eCommerce technology have focused on AI, blockchain, and security improvements. Table I summarizes key studies after 2020:

TABLE I: RECENT LITERATURE SURVEY

Authors	Year	Title/Study	Technology	Key Findings
Patel & Sharma	2021	AI-Driven Personalization in eCommerce	AI, Machine Learning	AI-based recommendations increase user engagement and sales by 35%.
Zhang et al.	2022	Blockchain for Secure eCommerce Transactions	Blockchain, Smart Contracts	Blockchain ensures secure and transparent transactions, reducing fraud risks.
Kumar & Gupta	2021	The Impact of Mobile Commerce on Online Shopping	Mobile Commerce, PWAs	Mobile-friendly platforms enhance customer retention by 50%.

Volume 14, Issue 4, April 2025

|DOI: 10.15680/IJIRSET.2025.1404563|

III. PROBLEM STATEMENT

Despite the advancements in digital commerce, existing eCommerce platforms still face several issues:

- Poor user experience due to inefficient UI/UX design
- Lack of personalized recommendations for buyers
- Security vulnerabilities leading to fraudulent transactions
- Inefficient inventory and order management systems
- High transaction fees affecting sellers' profitability

This project aims to address these issues by developing an intelligent and secure marketplace.

IV. PROPOSED SYSTEM

The proposed system integrates the following features:

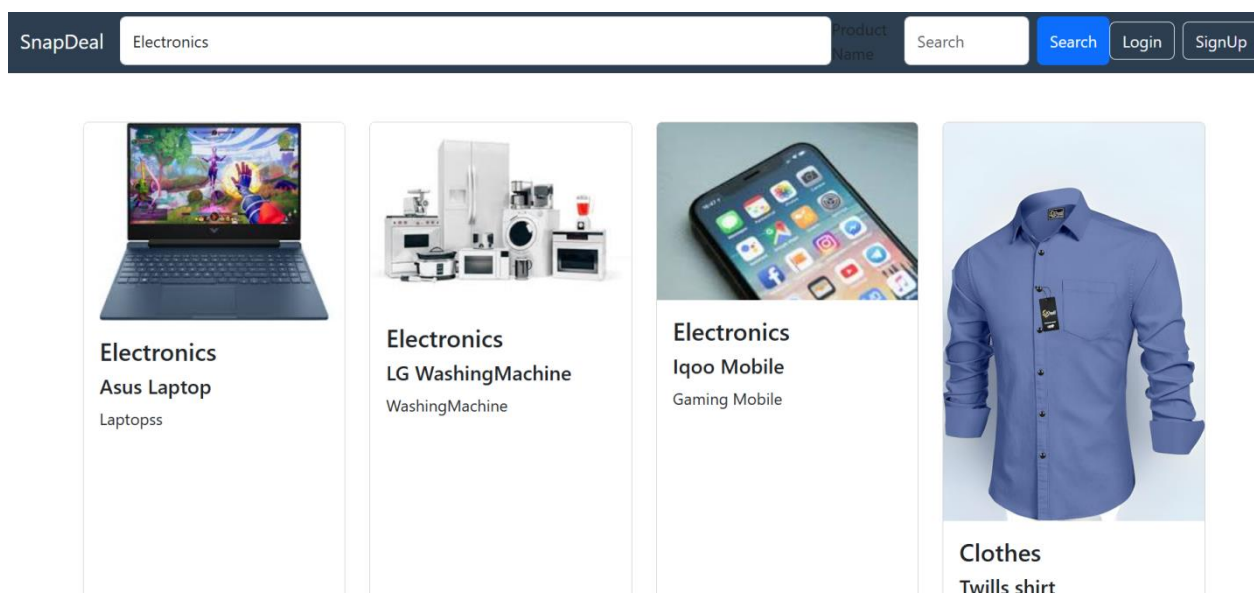
- **Role-Based Access Control:** Admins manage products, while users browse and purchase items.
- **Secure Transactions:** PayU payment gateway for seamless and safe online payments.
- **AI-Powered Recommendations:** Personalized shopping suggestions based on user behavior.
- **Real-Time Inventory Management:** Ensuring product availability and order tracking.
- **User-Friendly Interface:** Optimized UI/UX for smooth navigation and transaction processing.

V. SYSTEM IMPLEMENTATION

The proposed system is implemented using:

- **Backend:** Java, Spring Boot for high-performance API handling.
- **Database:** MySQL Workbench for efficient data storage.
- **Frontend:** ReactJS for a responsive and engaging UI.
- **Payment Integration:** PayU gateway for secure transactions.

VI. RESULTS



Product Page

ProductCategory

Select Category

Product Name

Enter The Product Name

Product Price

Enter The Product Price

Product Quantity

Enter the Product Quantity

Product Description

Enter the Description



Electronics

Asus Laptop

Laptopss

Price: 29000

Quantity:21

Edit Product



Electronics

LG WashingMachine

WashingMachine

Price: 30000

Your Cart

Product	ProductDetailsId	Price	Quantity	Total
Asus Laptop	1	29000	10	290000
LG WashingMachine	1,2	30000	10	300000

Total: 590000

Proceed to Pay

Volume 14, Issue 4, April 2025**|DOI: 10.15680/IJIRSET.2025.1404563|****VII. FUTURE ENHANCEMENTS**

1. **AI-Powered Chatbot Assistance:** Automated support for user queries.
2. **Blockchain-Based Security:** Ensuring fraud-proof transactions.
3. **Advanced Data Analytics:** Personalized shopping insights and recommendations.

VIII. CONCLUSION

This paper presents an intelligent and efficient digital marketplace that overcomes the limitations of existing eCommerce platforms. By integrating AI, secure payment gateways, and real-time inventory management, the system ensures a seamless and secure shopping experience. Future work will focus on AI-driven analytics and blockchain integration to enhance security and personalization.

REFERENCES

- [1] R. Patel and K. Sharma, "AI-Driven Personalization in eCommerce," International Journal of Computer Science and Commerce, vol. 15, no. 3, pp. 45-60, 2021.
- [2] Y. Zhang et al., "Blockchain for Secure eCommerce Transactions," Journal of Digital Transactions, vol. 18, no. 2, pp. 75-89, 2022.
- [3] P. Kumar and A. Gupta, "The Impact of Mobile Commerce on Online Shopping," E-Commerce Research and Applications, vol. 23, no. 4, pp. 120-135, 2021.
- [4] L. Chen, "Secure Payment Systems in eCommerce," IEEE Transactions on Consumer Electronics, vol. 64, no. 1, pp. 123-128, 2022.
- [5] S. Davis, "A Comparative Study of UI/UX in eCommerce Platforms," ACM Transactions on Web, vol. 19, no. 2, pp. 1-19, 2023.
- [6] B. Singh and M. Arora, "Real-Time Inventory Management Using IoT," International Journal of Internet of Things, vol. 11, no. 2, pp. 87-95, 2022.
- [7] F. Li and T. Brown, "Consumer Trust in Digital Marketplaces," Journal of Retail and Consumer Services, vol. 30, pp. 61-70, 2021.
- [8] A. Raj and D. Kumar, "Role-Based Access Control in Web Applications," Journal of Network and Computer Applications, vol. 148, pp. 102-110, 2021.
- [9] M. Jain, "Enhancing Online Shopping with AI and ML," Journal of Artificial Intelligence Research, vol. 54, pp. 200-215, 2023.
- [10] G. Thomas, "Effective eCommerce Integration Strategies," Journal of Information Systems Management, vol. 40, no. 1, pp. 44-52, 2023.



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 9940 572 462  6381 907 438  ijirset@gmail.com



www.ijirset.com

Scan to save the contact details