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E-commerce website (FABLIK)

USMAN KHAN, NAWAZUDDIN[1], MOYEED RAMZAN MUJAWAR[2], KHALID AHAMED[3]
[1, 2, 3] *5th Semester B.E Students, Department of Computer Science and Engineering, Ghousia College of Engineering, Ramanagara, Karnataka, India*

Abstract- FABLIK is a modern e-commerce web application designed to provide users with a seamless, efficient, and secure online shopping experience. The platform integrates essential e-commerce functionalities such as product browsing, advanced search and filtering, secure user authentication, shopping cart management, and an intuitive checkout system. FABLIK focuses on user-centric design, high performance, and scalability using contemporary web technologies. The system also includes an admin interface for product management, inventory control, and order monitoring. With responsive design and optimized workflows, FABLIK caters to both customers and administrators, ensuring smooth operations and enhanced digital retail experiences. This project demonstrates the application of web development principles, UI/UX design, and database management within the context of a scalable e-commerce solution

I. INTRODUCTION

Human E-commerce has transformed the way people buy and sell products by eliminating geographical barriers and enabling around-the-clock shopping. With the increasing demand for fast, reliable, and user-friendly online shopping platforms, developers must create systems that meet modern expectations of convenience and security. FABLIK is an e-commerce website developed to address these needs by offering a streamlined shopping experience supported by strong backend functionality.

The platform allows users to browse a wide range of products, view detailed descriptions, place orders, and make secure transactions. To ensure accessibility across different devices, FABLIK features a responsive interface built with modern web design standards. The system architecture includes a robust backend for data storage, product management, and user authentication, ensuring data integrity and smooth operation. Additionally, the admin module equips store operators with tools for adding new products, updating inventories, and managing customer orders.

II. LITERATURE SURVEY & RELATED WORK

1. Overview of e-commerce research trends

Recent literature on e-commerce clusters around two complementary themes: business/platform strategies (marketplaces, monetization, cross-border trade) and technical innovations that improve scalability, personalization, security, and UX. Researchers emphasize that a successful modern store must combine a sound business model with a robust, instrumented technical stack that supports personalization and analytics.

2. Platform choices and trade-offs (hosted vs self-hosted)

Comparative industry analyses consistently contrast hosted, SaaS platforms (e.g., Shopify) with self-hosted/open-source systems (Magento, WooCommerce, PrestaShop).

3. Architecture patterns: monoliths, microservices, and cloud-native design

As stores scale, monolithic apps often hit limits in deployability and fault isolation. Microservices (decomposing catalog, cart, checkout, search, user profiles into separate services) are widely recommended for high-traffic platforms because they improve scalability and independent deployment — but they also introduce complexity (service orchestration, distributed data, testing). Many recent papers and engineering guides describe hybrid approaches (modular monoliths or bounded microservices) as pragmatic for mid-sized projects. Your architecture choice for FABLIK should balance team size, expected traffic, and long-term feature roadmap.

4. Personalization and recommender systems

Personalized recommendations are among the highest-impact features in e-commerce: from collaborative filtering and content-based methods to modern deep learning, graph-based models, and

hybrid systems. Surveys covering developments through 2024–2025 show movement toward session-aware recommenders, explainability, and RL/LLM-enhanced ranking, which improve conversion and retention when backed by clean behavioral data and offline/online evaluation pipelines.

5. Security, payments, and regulatory best practices

Securing payment flows and protecting cardholder data is non-negotiable. The PCI Security Standards Council defines the Payment Card Industry Data Security Standard (PCI-DSS) and related guidance that e-commerce sites must follow when handling card data. Best practices include TLS everywhere, tokenization (or redirect/hosted payment pages to avoid handling card data), server-side validation, secure credential management, and continuous monitoring. For FABLIK, integrating a PCI-compliant gateway or adopting hosted checkout reduces the compliance burden.

6. UX, mobile performance, and accessibility

User experience research and industry analyses highlight mobile-first design, fast perceived performance, and low checkout friction (guest checkout, progressive disclosure, saved addresses). Optimizing image delivery (responsive images, lazy loading), minimizing round trips during checkout, and ensuring accessibility (WCAG guidelines) are strongly correlated with higher conversion and lower cart abandonment. These UX priorities should inform FABLIK's front-end design and performance optimizations

III. SYSTEM ARCHITECTURE

The system architecture of FABLIK is designed to provide a scalable, secure, and efficient e-commerce environment. It follows a modular, layered structure that separates the user interface, business logic, and data management layers.

1. Architectural Overview

FABLIK follows a three-tier architecture:
1. Front-End / Presentation Layer
2. Back-End / Business Logic Layer
3. Database & Storage Layer

2. COMMERCIAL PLATFORM COMPARISONS (SHOPIFY, MAGENTO, WOOCOMMERCE, OPENCART, ETC.)

Industry comparisons repeatedly contrast hosted (SaaS) solutions (e.g., Shopify) against self-hosted/open-source systems (Magento, WooCommerce, PrestaShop). Hosted platforms favor fast time-to-market, managed security, and simplified payment integrations; self-hosted platforms offer deeper customization and control over performance and data but require more maintenance. These tradeoffs are important when designing FABLIK's deployment strategy (costs, extensibility, and third-party integrations). Bss Commerce+1

3. ARCHITECTURES: MONOLITHIC VS MICROSERVICES & CLOUD ANALYTICS

Technical research shows a clear move toward microservices and cloud-native designs for larger/scaleable e-commerce sites. Microservices improve scalability, independent deployability, and fault isolation (catalog, cart, payment, search can be separate services), while introducing complexity in orchestration and testing. Cloud analytics and data pipelines are frequently layered on top (for personalization, sales analytics, inventory forecasting). Your architectural choices for FABLIK (monolith vs microservice, cloud hosting, caching and CDN strategies) should balance team capacity against expected traffic and feature growth. JRPS Journal+1

4. PERSONALIZATION & RECOMMENDER SYSTEMS

Personalized product recommendations are among the most studied and impactful technologies in e-commerce. Surveys and recent work show a progression from collaborative filtering and content-based methods to deep-learning and graph-based models (graph attention networks, hybrid approaches) that better capture user/item context and session signals. Personalization improves conversion, average order value, and retention—important design goals for FABLIK's UX and back-end data pipeline. ResearchGate+1

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5. SECURITY, PAYMENT INTEGRATION, AND PRIVACY CONCERNS

Security of e-payment systems and privacy of customer data are recurring themes. Papers and reviews highlight common threats (man-in-the-middle, injection attacks, fraud, API credential leakage) and countermeasures (TLS everywhere, strong tokenization, PCI-DSS compliant payment gateways, server-side validation, rate limiting, secure secret management). Integrating a trusted payment gateway and implementing secure session & data handling should be a priority for FABLIK.

IV. METHODOLOGY

The development of the FABLIK e-commerce website followed a structured and systematic methodology. The process began with requirement analysis, where both functional needs (product browsing, cart, checkout, user login) and non-functional needs (security, performance, scalability) were identified. Based on these requirements, the system was designed using a three-tier architecture, including the front-end, back-end, and database layers. UI/UX wireframes were prepared to ensure a smooth and user-friendly interface.

The front-end was developed using modern web technologies to create responsive pages for product listing, user authentication, cart management, and checkout. Simultaneously, the back-end was implemented using server-side frameworks to handle business logic, including authentication, product management, cart operations, payments, and order processing. REST APIs were developed to enable communication between the client and server.

The database was designed to store user data, products, categories, cart items, and orders with proper indexing and relationships for efficient access. Security measures such as password encryption, input validation, and role-based access control were applied throughout the system

The application underwent thorough testing, including functional, usability, and API testing, to ensure error-free operation. Finally, the system was deployed on a suitable hosting platform and reviewed to ensure all requirements were met, resulting in a stable and efficient e-commerce shopping application.

V. EXPERIMENTAL RESULTS

The experimental evaluation of the FABLIK shopping app demonstrates that the system performs efficiently in terms of usability, functionality, and responsiveness. User testing showed that the interface is intuitive, with smooth navigation across product listings, cart operations, and checkout processes. Performance tests indicated fast page loading times, reliable database transactions, and stable handling of simultaneous user requests.

Functionality tests confirmed that key features—such as user authentication, product search and filtering, secure payment processing, and order tracking—operated without errors. Browser compatibility tests validated consistent behavior across major platforms like Chrome, Firefox, and Edge. Additionally, the responsive design performed well on various devices, including desktops, tablets, and mobile phones.

Overall, the results highlight that FABLIK meets the intended objectives of providing a seamless and efficient online shopping experience, with strong system stability, high user satisfaction, and reliable performance under real-world usage conditions.

A. Experimental Results – Summary Table

Category	Observations / Results
Functionality	All core features worked smoothly, including user login, product browsing, cart management, and checkout.
Performance	Fast loading time, stable server responses, and efficient database queries under normal load.
Usability	Interface is easy to navigate; users completed tasks without confusion.
Compatibility	Website worked consistently across Chrome, Firefox, and Edge.
Responsive Design	Layout adapted well to mobile, tablet, and desktop screens.
Security	User data protected with secure authentication and encrypted transactions.

VI. ETHICAL & PRIVACY CONSIDERATIONS

The FABLIK e-commerce platform was developed with a strong focus on ethical responsibility and user privacy. The system collects only essential user

information and protects it through encryption and secure communication methods. Transparent data practices ensure that users clearly understand how their information is stored, used, and shared.

User consent is prioritized, allowing individuals to control their data, update personal details, or delete their accounts when needed. Ethical design principles were followed to avoid misleading users, ensuring accurate product information and fair user experience. The platform maintains accessibility for all users and enforces strict security measures like role-based access control to prevent unauthorized access.
Overall, the FABLIK system upholds high standards of security, fairness, transparency, and privacy protection throughout its operation.

VII. CONCLUSION

The FABLIK e-commerce website project successfully demonstrates the development of a functional, user-friendly, and secure online shopping platform. The system integrates essential e-commerce features such as product browsing, user authentication, cart management, and secure checkout, delivering a seamless shopping experience. Through a well-structured system architecture and efficient backend processing, FABLIK ensures reliable performance, fast response times, and accurate data handling.

The project also prioritizes ethical and privacy considerations, ensuring responsible data usage, strong security protections, and fair access for all users. Overall, FABLIK fulfills its objective of creating a modern, accessible, and efficient e-commerce platform, capable of supporting real-world shopping needs and providing a solid foundation for future improvements.

VIII. FUTURE SCOPE

- Mobile Application Development

A dedicated Android/iOS app can be developed to improve accessibility and enhance the mobile shopping experience.

- AI-Powered Recommendation System

Machine learning algorithms can be integrated to provide personalized product recommendations based on user preferences and browsing behavior.

- Advanced Search & Filters

Features like voice search, smart filters, and predictive search suggestions can be added to make product discovery faster and easier.

- Digital Wallet Integration

Adding wallets like Paytm, Google Pay, PhonePe, or an in-app wallet system would make payments easier and more flexible.

- Chatbot & Customer Support Automation

An AI chatbot can handle queries, track orders, and assist users 24/7.

- Seller Dashboard & Marketplace Model

The platform can be expanded to allow multiple sellers to manage inventories, orders, and analytics in real time.

- AR-Based Try-On / Product Preview

Augmented Reality can be used for virtual try-ons (clothing, accessories) or previewing items like furniture in real-world spaces.

- Advanced Analytics Dashboard

Admins can receive detailed insights into sales trends, user behavior, and inventory performance using real-time analytics tools.

REFERENCES

[1] *Ghousia College of Engineering, Dept. of CS & Engineering, "*E-commerce website (FABLIK)*," Mini Project Report, 2025.*
[2] Laudon, K. C., & Traver, C. G. (2021). *E-Commerce: Business, Technology, Society* (16th Edition). Pearson.
[3] Turban, E., King, D., Lee, J., Liang, T.-P., & Turban, D. (2015). *Electronic Commerce: A Managerial and Social Networks Perspective*. Springer.
[4] Pressman, R. S. (2014). *Software Engineering: A Practitioner's Approach* (8th Edition). McGraw-Hill Education.
[5] Sommerville, I. (2016). *Software Engineering* (10th Edition). Pearson.