Inspira-Journal of Commerce, Economics & Computer Science (JCECS)
(A National bi-lingual Quarterly Double Blind Open Access Peer Reviewed Refereed Journal)
ISSN : 2395-7069(Print), Impact Factor: (Cosmos 7.650 & I2OR 5.120), Volume 12, No. 02(II), April-June, 2026, pp. 01-09

Development of Beauty Product E-Commerce Platform DIM-Glowing

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Citation: *Patil, Y. & Patil, V. (2026). Development of Beauty Product E-Commerce Platform DIM-Glowing. Journal of Commerce, Economics & Computer Science, 12(02(II)), 01–09.*

Abstract

E-commerce platforms have significantly transformed the way consumers purchase products, especially in the beauty and skincare industry. This research paper presents the development of DIM-GLOWING, a web-basede-commerce platform designed for beauty products. The system allows users to browse skincare products, view product details, and create personal accounts for purchasing items online. The platform is developed using modern web technologies including HTML, CSS, JavaScript, Node.js, Express.js, and MongoDB. The proposed system aims to provide a user-friendly interface and efficient product management for online beauty shopping. Although the system is currently under development, it demonstrates the fundamental features required for a functional e-commerce platform.

Keywords: *E-Commerce, Beauty Products, Web Development, Node.js, Mongo DB, Online Shopping.*

Introduction

The rapid advancement of internet technologies has significantly transformed the way businesses operate and interact with customers. E-commerce has emerged as a powerful platform that enables businesses to offer products and services online with greater efficiency and accessibility. In recent years, the beauty and skincare industry has experienced substantial growth in the digital marketplace, as consumers increasingly prefer online platforms for product discovery, comparison, and purchasing **[5][6]**.

Online beauty platforms provide users with detailed product information, reviews, and personalized recommendations, which enhance the overall shopping experience. However, the success of such platforms depends on several factors including user interface design, system performance, trust, and security **[1][3]**.

This research focuses on the development of DIM-GLOWING, a web-based e-commerce platform designed specifically for beauty and skincare products. The system is built using modern web technologies such as HTML, CSS, JavaScript, Node.js, Express.js, and MongoDB to ensure scalability and efficiency. The platform aims to provide a user-friendly interface, secure authentication, and effective product presentation.

The study also emphasizes the importance of integrating technological and user-centric approaches in developing modern e-commerce systems. By combining usability, performance, and security, the proposed system aims to deliver an improved and reliable online shopping experience.

Literature Review

The growth of e-commerce has significantly influenced consumer behaviour, particularly in the beauty and skincare sector where online platforms provide convenience and product variety **[5][6]**. Customers increasingly rely on digital platforms to explore, compare, and purchase products without visiting physical stores.

Trust is one of the most critical factors affecting online shopping adoption. Research shows that user trust, perceived usefulness, and system reliability strongly influence purchase intentions in e-commerce environments **[1][7]**. This is especially important in beauty e-commerce, where product authenticity and quality are major concerns.

Website design and product presentation play a crucial role in shaping customer perceptions and decisions. High-quality images, detailed descriptions, and organized layouts enhance user engagement and satisfaction **[2]**. In the beauty industry, visual appeal and clear product information are essential for influencing buying behaviour.

Consumer behaviour studies also indicate that website quality, reputation, and emotional response significantly impact online purchase intentions **[3]**. A well-designed platform reduces perceived risk and improves customer confidence.

Customer loyalty is another important factor for long-term success in e-commerce systems. Research highlights that customer satisfaction, service quality, and trust contribute to repeat purchases and brand loyalty **[9]**.

Usability and system design are equally important for ensuring a smooth user experience. Simple navigation, fast loading time, and intuitive interfaces improve user interaction with the platform **[10]**.

Modern e-commerce platforms rely on scalable technologies and efficient backend systems to handle large volumes of data and user interactions. Technologies such as Node.js and MongoDB enable real-time processing and flexible data management **[4][11][12][13]**.

In the context of the beauty industry, recent studies show that consumers prefer online platforms that offer personalized recommendations, product reviews, and easy comparison features **[14]**. These features enhance user engagement and improve decision-making.

Overall, the literature suggests that successful e-commerce platforms must integrate trust, usability, technology, and customer-centric design. These findings provide a strong foundation for the development of the DIM-GLOWING platform.

Existing System

Traditional methods of purchasing beauty products mostly depend on physical stores or simple online platforms that offer only a limited range of options for browsing and buying products. Many small businesses continue to be without an effective online system for showcasing their products and handling customer interactions. In the current system, customers need to go to physical stores in order to view products, compare prices, and complete their purchases. This process may take a lot of time and be less convenient. Some online platforms might also be missing personalized interfaces or effective product organization. Moreover, numerous conventional systems lack sophisticated features like convenient product searching, integrated digital payment options, and user account management. These restrictions emphasize the importance of developing a more effective and easy-to-use e-commerce platform.

Problem Statement

Traditional methods of purchasing beauty and skincare products rely heavily on physical stores or basic online platforms with limited functionality. Customers often face difficulties in exploring a wide range of products, comparing prices, and accessing detailed product information. Additionally,many small businesses lack efficient digital platforms to showcase their products.Existing systems also suffer from poor user interface design, lack of secure authentication, absence of online payment integration, and limited product categorization. These limitations reduce user convenience and overall shopping experience. Therefore, there is a need to develop a modern, user-friendly, and efficient e-commerce platform specifically designed for beauty and skincare products.

Objectives of the Study

The main objectives of the DIM-GLOWING e-commerce platform are:

- To develop a web-based platform for beauty and skincare products.
- To provide a user-friendly and interactive interface for customers.
- To enable users to browse products and view detailed information.
- To implement secure user authentication (login and registration).
- To design a scalable system using modern technologies like Node.js and MongoDB.
- To improve the overall online shopping experience.
- To provide a foundation for future features such as online payment, shopping cart, and order tracking.

Proposed System

The suggested DIM-GLOWING system is an online e-commerce platform tailored for beauty and skincare products. The platform offers a contemporary and easy-to-use interface that allows customers to effortlessly explore products and handle their accounts. The system enables users to browse various beauty products, check product information, and sign up on the platform for future buying. The platform is built with up-to-date web technologies including HTML, CSS, JavaScript, Node.js, Express.js, and MongoDB. The suggested system seeks to enhance the online shopping experience through a structured product presentation, easy navigation, and safe user verification. Upcoming enhancements will feature options like a shopping cart, payment processing through Razorpay, and the ability to track orders.

- **Comparison Table**

Feature	Existing System	Proposed System (DIM-GLOWING)
Shopping Method	Physical stores or limited online platforms with limited resources	Web-based e-commerce platform with more variety of product
Product Browsing	Limited product display	Organized product catalog easy to find and in much large quantity
product Availability	Not always available some time it id out of stock	Large collection of stock arability
Technology	Traditional retail systems	Modern web technologies, to make more user-friendly website
Accessibility	Limited to store location or delivery not available for that location	Accessible online anywhere
1Product Information	Limited information of Product	Detailed product display with true Reviews and ratings

- **Research Methodology**

The creation of the DIM-GLOWING e-commerce platform adheres to a systematic approach in software development. The system has been created and put into practice with up-to-date web development tools to guarantee scalability, ease of use, and operational efficiency. The development process consists of the following stages:

  - Requirement Analysis: During this phase, the fundamental needs of the e-commerce system were determined. The key features consist of product browsing, user login, product presentation, and potential future integration of online ordering.
  - System Design: The system architecture and database structure were created to accommodate product storage, user data, and future order management capabilities.
  - Implementation: The system was built using frontend and backend technologies including HTML, CSS, JavaScript, Node.js, Express.js, and MongoDB.
  - Testing: Basic testing was performed to check the functionality of user registration, login pages, and product display modules.

- Deployment: The system is currently operating locally and can be installed on a web server in future versions.

Project Development Timeline

The creation of the DIM-GLOWING e-commerce platform proceeded through multiple stages, such as analysing requirements, designing the system, implementing it, and conducting tests. Each stage played a role in the platform's successful development.

- **Requirement Analysis:** Determining the necessary features for the beauty product online shopping platform
- **System Design:** Planning the system structure and database layout
- **Frontend Development:** Building the user interface with HTML, CSS, and JavaScript
- **Backend Development:** Developing server-side functionality using Node.js and Express.js
- **Database Integration:** Saving product and user information in MongoDB
- **Testing:** Evaluating system performance and resolving issues
- **Future Development:** Introducing a shopping cart, payment system, and order handling features.

Algorithm / Working of the system

The DIM-GLOWING platform follows a structured process to allow users to browse beauty products and manage their accounts. The system workflow ensures efficient communication between the user interface, server, and database.

Algorithm: DIM-GLOWING E-Commerce System

Step 1: Start the system.

Step 2: User opens the DIM-GLOWING website in a web browser.

Step 3: System loads the homepage and displays available beauty products.

Step 4: User browses product listings and views product details.

Step 5: If the user wants to purchase products, the system prompts the user to login or register.

Step 6:

- If the user is new → create a new account.
- If the user already has an account → login using email and password.

Step 7: The server validates user credentials using the MongoDB database.

Step 8: If authentication is successful, the user is granted access to the platform.

Step 9: User selects products for future purchase.

Step 10: In future development, the system will allow users to add products to the shopping cart and proceed to checkout.

Step 11: Payment integration (Razorpay) will handle secure transactions.

Step 12: Order confirmation will be generated.

Step 13: End process.

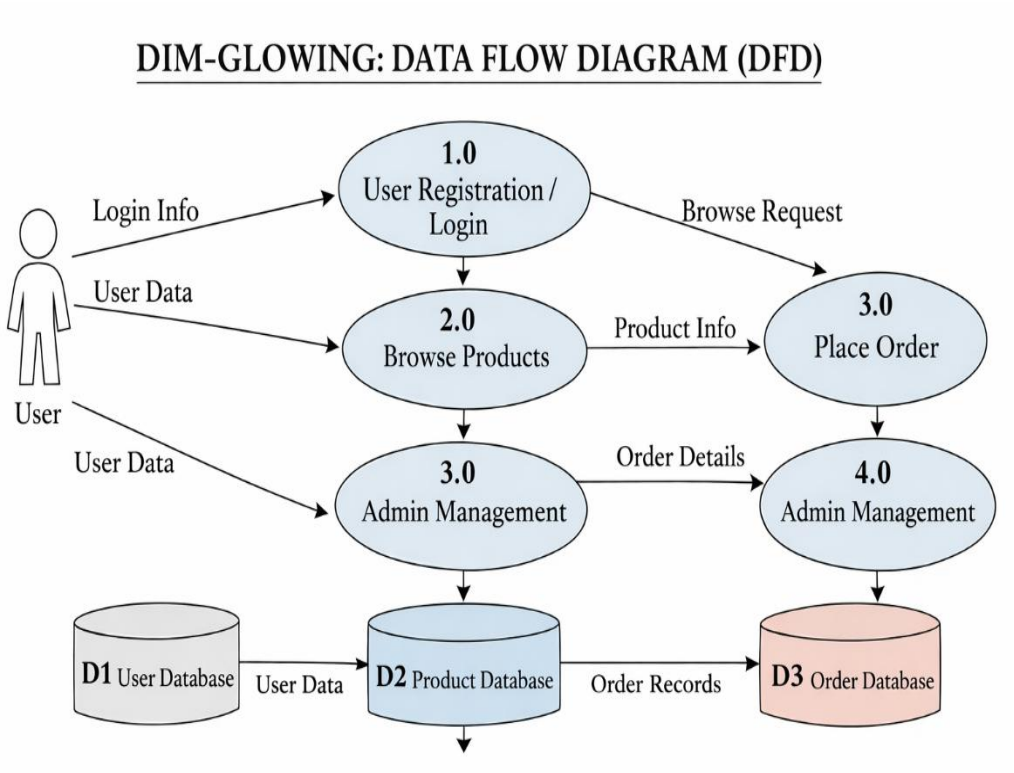

Fig. 1: Data Flow Diagram of DIM-GLOWING System

- **System Architecture & Database**

The proposed system follows a client-server architecture where the frontend interacts with the backend server to retrieve product data and manage user accounts.

Frontend Technologies

The frontend of the system is developed using:

- HTML
- CSS
- JavaScript

These tec'hnologies are used to create the website layout, navigation system, product listings, and user interface.

Backend Technologies

The backend of the platform is developed using:

- Node.js
- Express.js

These technologies manage server operations, API requests, and data communication between the frontend and database.

The system uses MongoDB as the database to store informationsuch as:

- User account details
- Product information
- Order data
- Customer interactions

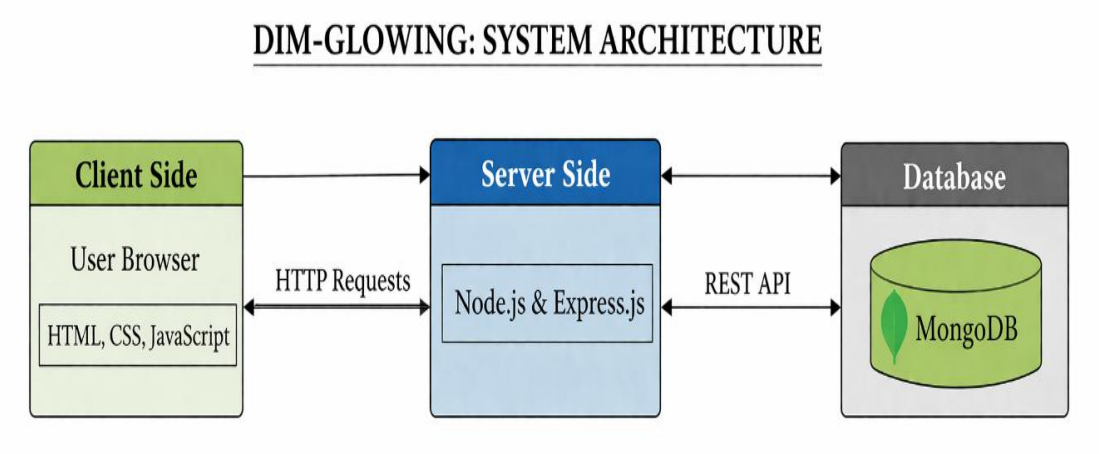

Fig. 2: System Architecture of DIM-GLOWING Platform

System Modules

The DIM-GLOWING platform consists of several important modules.

- **User Authentication Module**

This module allows users to create accounts and log into the platform. Each user has a unique account which allows them to manage their purchases and personal information.

- **Product Display Module**

The system displays beauty products with images, prices, and ratings. Users can explore various skincare products available on the platform.

- **Navigation Module**

The platform provides different sections for easy navigation such as:

  - Home
  - Collection
  - Shop
  - Offer
  - Blog

These sections allow users to easily browse through different product categories.

- **Shopping Module (Under Development)**

The shopping cart and checkout system are currently under development. Future versions will allow users to add products to a cart and place orders.

Implementation

The DIM-GLOWING platform was developed using up-to-date web development technologies. The main page showcases highlighted beauty items together with special promotions and deals. Each product features a picture, cost, score, and name. The system also features a search bar, navigation menu, and product categories that enable users to effortlessly browse available products.

The user authentication system features sign-up and login pages, allowing customers to set up accounts and securely access the platform. The interface design emphasizes offering a clear and easy-to-use experience for customers who shop for beauty products online.

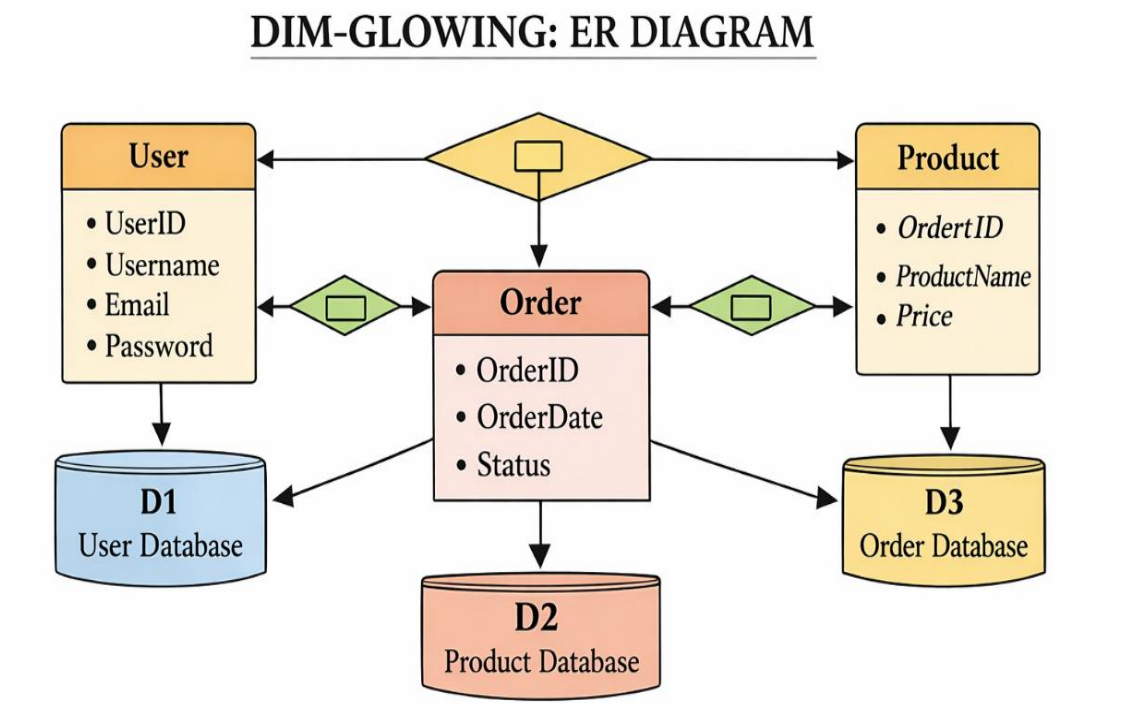

Fig. 3: Entity Relationship Diagram of DIM-GLOWING Platform

Results and Discussion

The present setup of the DIM-GLOWING system showcases the essential characteristics needed for an online beauty products platform. Users can effectively navigate through products, access product details, and sign up for accounts. The system interface offers a straightforward and appealing design that enhances the overall user experience.

Even though the project is still being developed, the features that have been added so far form a solid base for creating a full e-commerce platform.

Advantages of the Proposed System

The DIM-GLOWING e-commerce platform offers various benefits for both customers and businesses. The system is intended to make the process of browsing and buying beauty products online easier.

A key benefit of the system is its easy-to-use interface, which enables customers to effortlessly browse various skincare products.

The structured presentation of products makes it easier for users to compare items and see their details. Another benefit is that the platform is accessible online.

Users can access the site from any location with an internet connection, without the need to visit physical stores.

The system also includes a secure user authentication method, ensuring that each user has a distinct account to manage their purchases and personal details.

The platform is developed with up-to-date web technologies, allowing for scalability and simple enhancement with extra features like payment integration and order tracking.

Limitations of the System

While the DIM-GLOWING platform showcases the fundamental features of an e-commerce site, the current system version has certain limitations. The system lacks full shopping cart and checkout features at the moment, which are necessary for a fully functional e-commerce platform. Another

drawback is the lack of online payment integration, which will be added in future versions through a secure payment gateway. The system is also missing an administrator dashboard for handling products, users, and orders. These restrictions will be resolved in future platform updates.

Application Areas

The DIM-GLOWING platform has multiple applications across different sectors within the beauty and skincare industry. The system is suitable for beauty product retailers looking to sell their items online and expand their customer reach. Cosmetic brands can also use it to display their skincare products and offer customers comprehensive details about each item. Another area where these platforms can be applied is small and medium-sized beauty businesses, which can grow their operations without needing physical retail locations. The platform has the potential to be extended into a mobile e-commerce app in the future, enhancing accessibility and user interaction.

Future Scope

Future development of the DIM-GLOWING platform may include:

- Shopping cart system
- Online payment integration using Razorpay
- Order tracking system
- Product recommendation using Data Science techniques
- Mobile application development
- Customer review and rating system

Conclusion

This research presented the development of DIM-GLOWING, a web-based e-commerce platform designed for beauty and skincare products. The system successfully demonstrates core functionalities such as product browsing, user authentication, and user-friendly navigation using modern web technologies.

The study highlights the importance of trust, usability, and system performance in building effective e-commerce platforms. Research findings indicate that factors such as product presentation, website quality, and secure authentication significantly influence user satisfaction and purchase behaviour.

The implementation of technologies such as Node.js, Express.js, and MongoDB provides a scalable and efficient architecture capable of supporting future enhancements. Although the current system focuses on fundamental features, it establishes a strong foundation for developing a complete e-commerce solution.

Future improvements such as shopping cart functionality, payment gateway integration, and order tracking will further enhance the platform's capabilities. In conclusion, the DIM-GLOWING system demonstrates the potential of modern web technologies in delivering a reliable, user-centric, and scalable e-commerce platform for the beauty industry.

Acknowledgement

The author wishes to offer heartfelt thanks to Prof. Vinita H. Patil, a guide and faculty member at KCE's College of Engineering and Management in Jalgaon, for her valuable guidance, encouragement, and support during the development of this research project. The author also wishes to express gratitude to the faculty members in the Department of Data Science Engineering at KCE's College of Engineering and Management for offering the essential resources and expertise needed to complete this project. Finally, the author expresses gratitude to friends and colleagues for their support and encouragement throughout the development of the DIM-GLOWING E-Commerce Platform.

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