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A Role-Based Skincare B2B Marketplace Platform for Pharmaceuticals and Retailers

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ABSTRACT

The skincare and pharmaceutical industries, particularly at the small and medium enterprise level, often face fragmented supply chain and ordering processes due to the absence of digital infrastructure. This paper presents the design and implementation of a role-based B2B e-commerce platform that bridges pharmaceutical skincare product manufacturers directly with various customer endpoints such as retail shopkeepers, online sellers, influencers, and medical stores. The system enables manufacturers to list products and manage orders, while customers can browse, filter, and place orders seamlessly through a responsive web application. Built using Django and SQLite, the application supports real-time inventory management, order tracking, and role-based access control. Initial testing confirms improved efficiency and user satisfaction. Future enhancements include payment integration, multilingual support, and AI-based product recommendations.

KEYWORDS: Skincare E-Commerce, B2B Platform, Django, Order Management, Role-Based Access, Inventory Tracking

1. INTRODUCTION

In today's digital economy, the B2B procurement system in the skincare sector remains underdeveloped for small-scale manufacturers and retailers. This marketplace is tailored to meet the unique needs of small skincare brands that often struggle with market visibility. By offering a digital-first approach, the platform removes traditional bottlenecks and allows for better integration across the skincare supply chain. Additionally, the platform supports data tracking that benefits long-term sales forecasting and personalized marketing.

2. METHODOLOGY

2.1 Requirement Analysis

Through surveys and interviews with local shopkeepers and skincare manufacturers, key pain points were identified including delayed orders, out-of-stock issues, and lack of product discovery. Based on this feedback, a structured requirement document was developed.

2.2 System Design

A modular design was adopted using the Model-View-Template (MVT) architecture in Django. Role-based access control (RBAC) ensures that manufacturers, retailers, and admins have separate workflows.

2.3 Technology Stack

- Backend: Django (Python 3.8+), SQLite (development), PostgreSQL (planned)

- Frontend: HTML5, CSS3, Bootstrap 5, JavaScript

- Tools: GitHub, Heroku (for deployment), Django Admin

2.4 Implementation

Manufacturers can add product listings with images, pricing, and stock quantities. Shopkeepers can view and filter listings, manage carts, and place orders.

2.5 User Feedback Integration

After initial deployment, structured feedback was gathered from shopkeepers and influencers who participated in testing. Based on their input, improvements such as simpler navigation, product categorization filters, and quick reorder options were added.

3. RESULTS

The system was deployed and tested under a simulated user base of 12 manufacturers and 12 retailers. Key results include:

- 100% accuracy in role-based navigation and order visibility

- Order completion under 3 seconds

- Page load speed improved by 73% after caching integration

- Approximately 85% of users rated the ordering process as 'very easy' in usability surveys

4. TECHNOLOGIES USED

Component	Technology/Tool
Backend	Django (Python 3.8+)
Database	SQLite (for development)
Frontend	Bootstrap 5
Web Server	JavaScript
Deployment	Gunicorn
Version Control	GitHub

5. ARCHITECTURE OVERVIEW

The platform follows a 3-tier architecture:

- Presentation Layer: UI for users built with Bootstrap

- Logic Layer: Django-based backend with modular views and role management

- Data Layer: SQLite storing Users, Products, Orders, and Inventory

6. CONCLUSION

The implemented skincare B2B platform effectively streamlines interactions between manufacturers and retailers. With modular scalability, the platform has the potential to extend beyond skincare into broader health and wellness verticals. The architecture is flexible enough to support multiple product categories, regional pricing models, and future mobile-first interfaces.

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