Sale Management System for Pharmaceutical Shop

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Abstract. The Sale Management System for Pharmaceutical Shop is developed to digitize and streamline the operations of modern pharmacies. This system provides an efficient, user-friendly platform for pharmacists to manage medicines, suppliers, purchases, and sales while ensuring accurate inventory control and customer service. By minimizing manual paperwork and reducing human error, the system enhances efficiency, accuracy, and transparency in daily pharmacy operations. Through implementing this system, pharmacies can improve overall productivity, maintain regulatory compliance, and deliver better service to customers.

Keywords: automation, inventory, pharmacist, pharmaceutical, retail, supplier, wholesale.

INTRODUCTION

In today's fast-paced and digitally driven healthcare industry, traditional methods of managing pharmacy operations often result in inefficiencies, stock mismanagement, and communication gaps between suppliers, pharmacists, and customers. For many pharmacies, manual record-keeping and spreadsheet-based inventory tracking can lead to errors, expired medicines going unnoticed, and difficulties in monitoring sales and purchases. To address these challenges, the system was developed. This system allows pharmacists to efficiently manage medicines, suppliers, purchases, and sales in a centralized database. Administrators and pharmacists can monitor the overall performance of the pharmacy and make informed decisions. The system not only ensures operational accuracy and transparency but also saves time, reduces paperwork, and enhances customer satisfaction. The primary objective of this study is to introduce a digital platform that improves pharmacy operations, supports efficient decision-making, and ensures reliable the distribution of medicines.

PROBLEM

In many pharmacies, the current process of managing inventory, sales, purchases, and customer records is still handled manually through paper-based logs or individual excel sheets, which result in inefficiencies. This traditional system often causes delays in medicine stock updates, increases the risk of human errors, lacks transparency in sales tracking, and makes overall management difficulties. Problems include expired medicines being sold, inaccurate purchase records, and difficulties in generating timely reports are common. Therefore, there is a clear need to develop a Sale Management System for Pharmaceutical Shop that can automate these processes, improve accuracy, and enhance organizational efficiency.

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APPROACH

This system consists of two main roles: Administrator and User. On the user side, there are two types: pharmacists and customers. Customers who are not logged in can access the homepage, browse available medicines, check announcements, and view the contact page. If they wish to place orders or manage their purchases, they must log in. Logged-in customers can update their profile, add medicines to the cart, place orders, review order history, receive notifications such as stock updates and order confirmations, and communicate with the pharmacy through the chatbot or contact page. After logging in, pharmacists can manage their profiles, record sales transactions, update inventory details, check expiry dates, and handle supplier-related activities such as purchase records and stock verification. On the administrator side, the admin must log in first. Once authenticated, the administrator can manage all user accounts, oversee supplier details, monitor purchases and sales, update item categories, and publish announcements. Additionally, the admin has authority to approve or restrict certain user actions, track customer feedback, and generate detailed reports on sales, purchases, and inventory performance. Figure 1 shows the system flow diagram for the system.

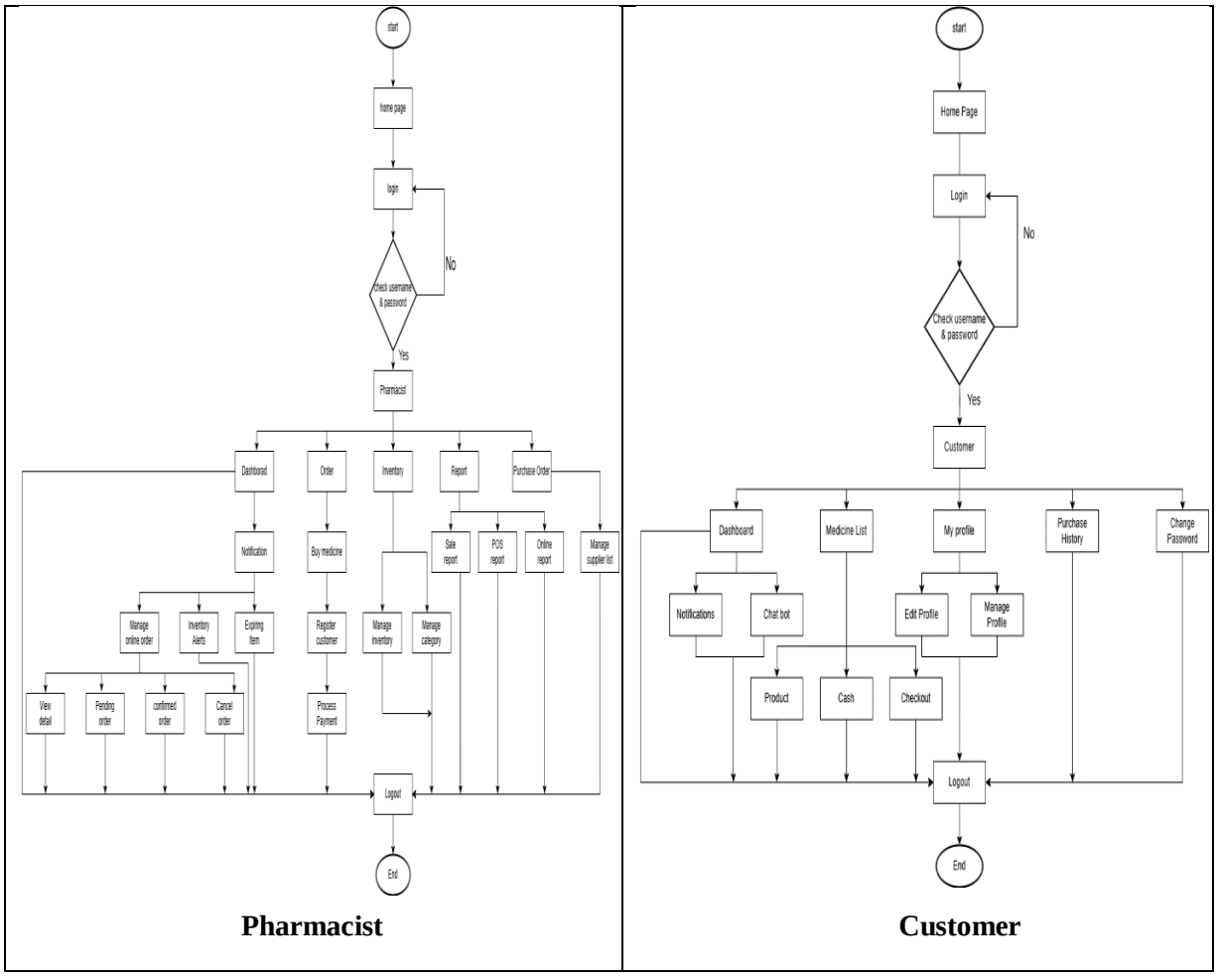

Figure 1: System Flow Diagram

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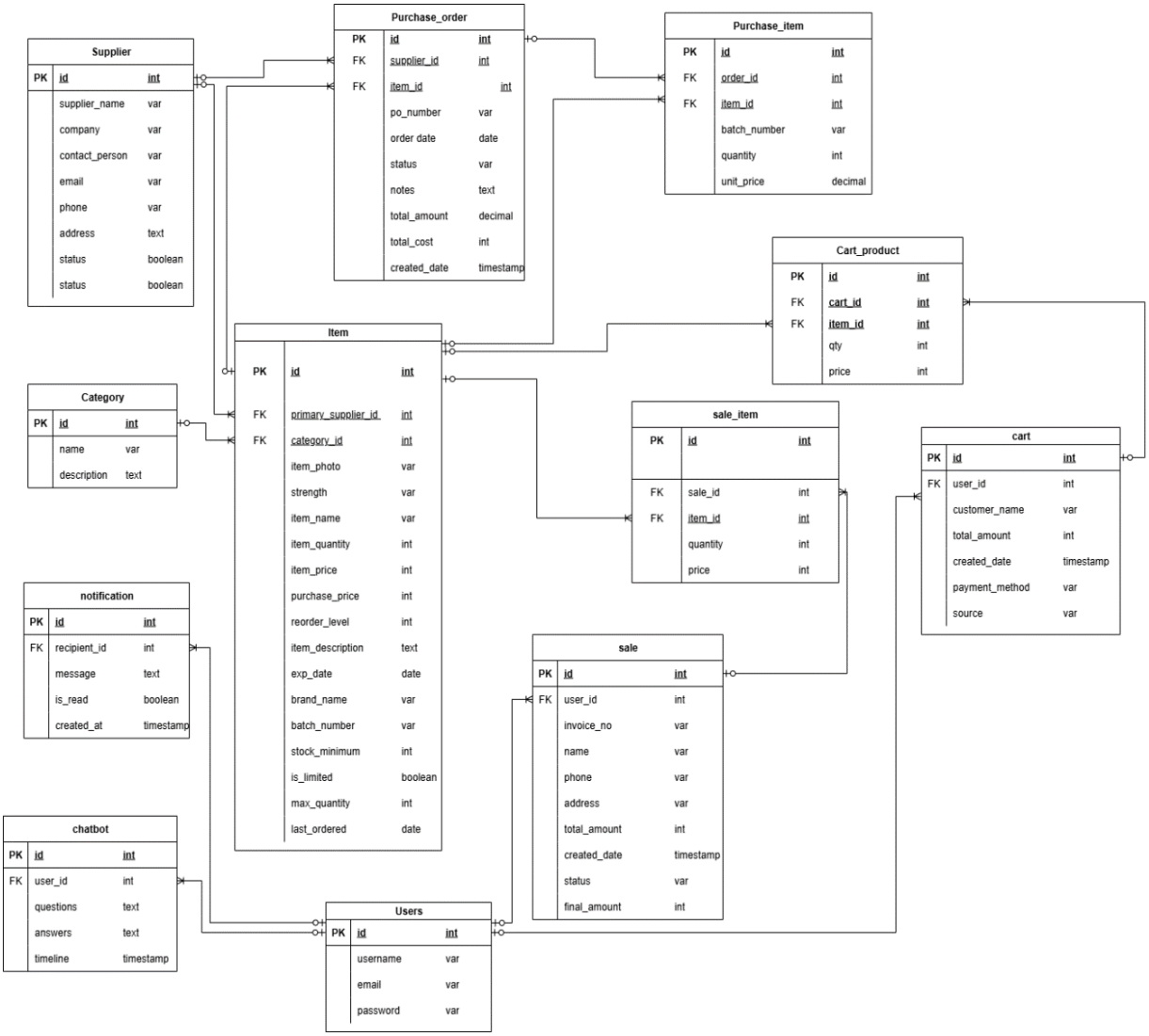

Figure 2: Database Design

An Entity Relationship Diagram (ERD) is a data modeling technique that defines business processes and provides the foundation for designing a relational database. Within an ERD, attributes can be represented as primary keys (PK), which uniquely identify a record in a table, or foreign keys (FK), which establish relationships between different tables. Cardinality notations are used to describe the nature of these relationships, such as one-to-many or many-to-many connections among entities. In this System, the database design consists of multiple interrelated tables for both administrator and user functionalities. The key entities include Users, Supplier, Item, Category, Purchase Order, Purchase Item, Sale, Sale Item, Cart, Cart Product, Notification, and Chatbot. Each table is linked through primary and foreign key constraints to ensure referential integrity and smooth data flow across modules. For example, the Item table connects with Supplier and Category, while also linking to Purchase and Sale records. Similarly, the Cart and Cart Product tables manage customer purchase activities, and the Notification and Chatbot tables enhance system interactivity. Figure 2 illustrates the complete database schema, showcasing all tables and their relationships, which form the backbone of the Sale Management System for Pharmaceutical Shop.

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RESULTS

After developing and testing the Sale Management System for Pharmaceutical Shop, the following results are achieved. The system successfully allows administrators, pharmacists, and customers to log in and access their respective functionalities. Pharmacists can manage medicine inventory, update product details, process sales, and track purchase orders efficiently. Customers can browse available medicines, add products to the cart, place orders, and view their purchase history with ease. The administrator can oversee user accounts, monitor transactions, manage suppliers, and generate detailed sales and inventory reports. Users found the system to be intuitive and more convenient compared to traditional manual methods of managing pharmacy operations. Feedback are collected from test users highlighted better organization of medicine records, reduced errors in sales processing, and increased transparency in order tracking. Figure 3 and 4 show the implementation of the system.

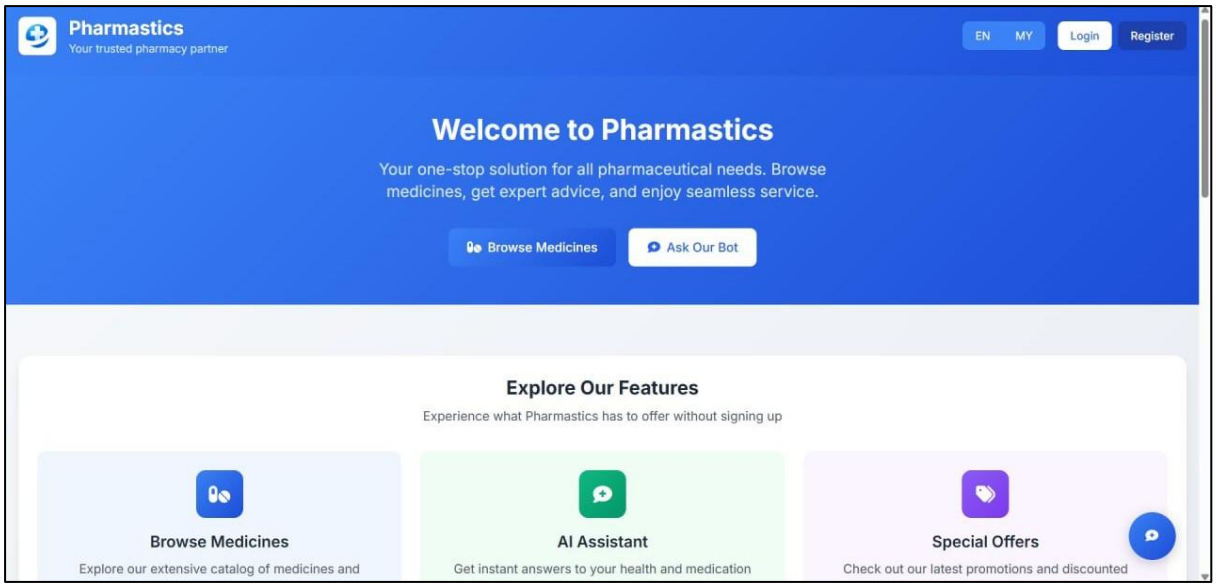

Figure 3: Home Page

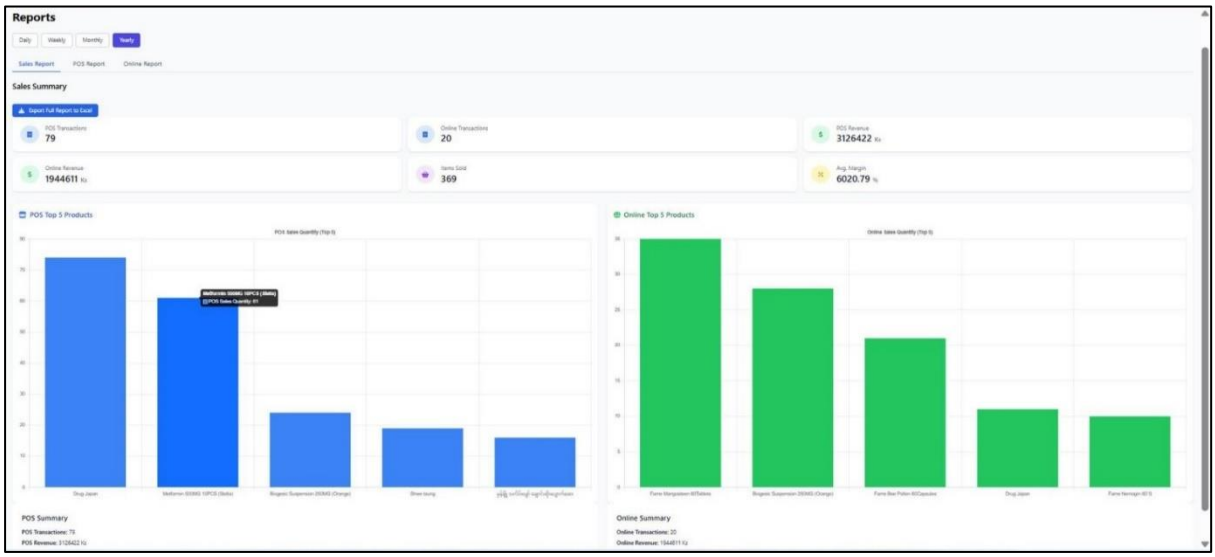

Figure 4: System Report

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CONCLUSION

The development of the Sale Management System for Pharmaceutical Shop has proven to be an effective solution for streamlining pharmacy operations and enhancing overall efficiency. By digitizing tasks such as medicine inventory management, purchase order tracking, and sales processing, the system reduces paperwork, minimizes errors, and saves time for both pharmacists and administrators. It also improves transparency and communication between suppliers, pharmacists, and customers regarding product availability and transactions. The system is user-friendly, secure, and accessible, providing a practical tool for managing pharmacy processes effectively. With features such as real-time stock monitoring, automated reporting, role-based access, and sales history tracking, the system supports have better decision-making and contributes to improved customer satisfaction. Overall, implementing this system adds significant value to pharmacy operations and paves the way for future digital transformation in healthcare and pharmaceutical management.

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