

CHAPTER ONE: INTRODUCTION

This chapter introduces the E-Dawo Online Pharmacy system, a comprehensive digital solution designed to modernize pharmaceutical operations across Somalia. It highlights the background of the problem, clearly defines the system's objectives, outlines the project scope, and explains its significance in transforming Somalia's healthcare ecosystem.

1.1 Background of the Study

The global pharmaceutical industry has witnessed significant transformations due to the integration of digital platforms. Leading examples like GoodRx, PharmEasy, and Netmeds have set benchmarks by offering efficient online medicine delivery, inventory management, and streamlined customer interfaces. In contrast, Somalia's pharmacies remain largely manual, paper-based, and fragmented. This results in inefficiencies, lack of transparency, and poor customer service.

Somalia's increasing internet penetration and smartphone adoption make it ripe for digital transformation. E-Dawo aims to capitalize on this by digitizing medicine distribution, enhancing operational transparency, and improving customer access to verified pharmaceuticals.

1.2 Problem Statement

The current pharmaceutical system in Somalia faces critical challenges:

- Difficulty verifying medicine authenticity
- Limited access to stock and price information
- Inefficient order, payment, and inventory management
- Absence of centralized reporting for oversight

These issues lead to public health risks, economic inefficiencies, and eroded customer trust. The lack of a unified digital platform significantly hinders regulatory enforcement and equitable healthcare access.

1.3 Purpose of the Study

The purpose of this project is to design and implement the E-Dawo Online Pharmacy system—a centralized, secure, and efficient web-based platform to digitize medicine sales and management in Somalia. It aims to solve issues of stock transparency, ordering inefficiencies, and regulatory data collection by providing dedicated interfaces for customers, pharmacy managers, and system administrators.

1.4 Objectives of the Study

1. Develop an intuitive customer portal for browsing and purchasing medicines
2. Implement a pharmacy manager dashboard for stock, order, and payment management

3. Create an administrative interface for system oversight and reporting
 4. Enhance transparency and efficiency across pharmaceutical operations
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1.5 Scope of the Study

Content Scope: Focused on the development of a modular web-based pharmacy management platform.

User Scope: Designed for three roles—Customers, Pharmacy Managers, and Administrators.

Feature Scope: Includes medicine listing, order processing, inventory tracking, role-based dashboards, reporting, and email integration.

Technical Scope: Built using React.js (frontend), Node.js + Express.js (backend), and MongoDB (database).

Geographic Scope: Initially targeted for Somalia, with scalability for East Africa.

Time Scope: Project duration spans May to July 2025.

1.6 Significance of the Study

E-Dawo addresses major gaps in Somalia's healthcare system. It enhances trust and transparency between pharmacies and customers, combats counterfeit drugs, and improves operational efficiency. It empowers pharmacies with tools for automation and provides customers with streamlined access to essential medicines. Administrators gain system-wide visibility, enabling effective monitoring and policy formulation.

CHAPTER TWO: LITERATURE REVIEW

This chapter explores global and regional digital pharmacy platforms and technologies. It draws lessons from systems like mPharma, GoodRx, and integrates applicable practices into E-Dawo. It also outlines the conceptual and technical foundation of the system.

2.1 Theoretical and Conceptual Foundation

The E-Dawo system is grounded in user-centered design principles. Its modular architecture provides role-specific functionalities for customers, pharmacies, and administrators. System components include medicine, orders, payments, inventory, and analytics modules.

2.2 Technology Stack

- **Frontend:** React.js, Tailwind CSS
- **Backend:** Node.js, Express.js

- **Database:** MongoDB
- **File Uploads:** Multer
- **Authentication:** JWT

These technologies offer flexibility, scalability, and ease of maintenance for real-time pharmaceutical operations.

2.3 Web Architecture

E-Dawo uses RESTful APIs and a client-server model. This promotes modularity, efficient data flow, and simplifies maintenance.

2.4 System Comparisons

Feature	Manual (e.g., Shifa Pharmacy)	E-Dawo Online Pharmacy
Medicine Listings	Paper or Excel Logs	Real-time searchable
Inventory Management	Manual count	Live stock tracking
Order Processing	Phone/in-person	Automated & online
Role-Based Access	Not available	Role-specific dashboards
Analytics	Not available	Reports & visual dashboards

CHAPTER THREE: SOFTWARE PLANNING AND ANALYSIS

This chapter describes the system's planning phase, including case study analysis, ERD design, and feasibility study.

3.1 Case Study: E-Dawo Pharmacy (Somalia)

E-Dawo transitions Somali pharmacies into the digital space by enabling them to register, manage medicines, process customer orders, and receive payments—all via a unified web interface. Admins oversee pharmacy onboarding and platform integrity. Customers gain easy access to pharmacy inventories and can order directly from verified sellers.

3.2 Entity Relationship Diagram (ERD)

The ERD illustrates relationships among key data models:

- **Users:** Customers, Managers, Admins

- **Medicines:** Listed by pharmacies, available to users
- **Orders:** Placed by users, fulfilled by pharmacies
- **Payments:** Linked to orders
- **Pharmacies:** Profiles linked to medicine listings

This structure ensures relational integrity, efficient querying, and supports future scalability.

3.3 Feasibility Study

Technical Feasibility

- Proven tech stack: React, Node, MongoDB
- Supported by cloud services (e.g., MongoDB Atlas)
- Skilled developers available

Operational Feasibility

- Easy to use
- High user adoption expected
- Smooth integration into pharmacy operations

Economic Feasibility

- Open-source tools reduce cost
- Projected ROI through efficiency gains and wider market access

Schedule Feasibility

- Timeline: 10–12 weeks
 - Agile development with built-in feedback loops and buffer
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Chapter Summary

This chapter documented the real-world need for E-Dawo, introduced system models like the ERD, and evaluated the feasibility of implementation. With validated tech and user demand, E-Dawo is well-positioned for impactful deployment.