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Online Medicine Store (MediCart)

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***Abstract*- Prescription medications and medical supplies are sold on our initiative, Online Medicine Store (Medicart), an online pharmacy platform that deliveries directly to customers. Because getting prescription drugs from home is so convenient, online pharmacies are growing in popularity all over the world. Medicart takes advantage of this trend in an effort to make medications quickly, safely, and affordably available. Nonetheless, positive opinions about internet shopping do not necessarily translate into real transactions. This study investigates how customers' views of risk and value influence their attitudes and actions around online drug purchases. Both traditional and internet pharmacies are growing in response to the rapidly expanding Indian healthcare market, which is a result of changing customer expectations and growing demand. By resolving customer complaints and providing dependable, transparent service, Medicart hopes to increase the use of e-pharmacy services, improve user experience, and foster consumer trust.**

I. INTRODUCTION

Online Medicine Store (Medicart) is an online pharmacy platform that delivers prescription drugs and medical supplies straight to consumers' homes. It can be stressful and time-consuming to travel when ill or to look for prescription drugs at several different stores. By providing a practical and effective online ordering mechanism, Medicart hopes to lessen these challenges. Customers save time, money, and gasoline by avoiding obstacles like traffic, inclement weather, or store unavailability (Kapil Sharma, Rinku Sharma, Feb 2016). Online medical shopping is growing in popularity and scalability as a result of the digital healthcare industry's explosive expansion. More businesses are introducing web-based services in an effort to stay up with this trend. By making drug purchases easier, more dependable, and more accessible to customers in various locations, Medicart helps bring about this change. In order to solve frequent problems that clients have in traditional pharmacies, Medicart aims to provide a user-friendly and reasonably priced platform (Ashita S. Patil1, Rutuja S. Patil2, 2019). Long wait times, erratic product availability, and the hassle of physically visiting a pharmacy are some of these difficulties. Customers may now order medications from the convenience of their homes at any time thanks to Medicart's decision to move the process online. From uploading a prescription to having it delivered right to your door, the site is made to make the entire process of buying medications easier. Transparency, usability, and safe payment methods are guaranteed. Medicart's platform aims to meet the growing demand for reliable and effective pharmaceutical distribution methods, especially in urban and semi-urban areas, as the Indian healthcare sector shifts more and more toward digital solutions. Medicart implements stringent procedures to address growing worries about illicit drug sales and prescription abuse (Brijnath, B. 2012). To guarantee that every purchase is medically justified, orders are only completed following a licensed physician's examination of the prescription. Additionally, a licensed pharmacist thoroughly inspects each medication before it is shipped. This two-level verification ensures access to safe, authentic pharmaceuticals, builds customer trust, and conforms with healthcare legislation. By putting these precautions in place, Medicart guarantees both client happiness and legal compliance, making it a dependable option in the online pharmacy market.

II. LITERATURE SURVEY

By providing digital platforms for buying medications, teleconsultations, and home delivery, online pharmacies like Medicart have revolutionized pharmaceutical access and improved consumer convenience and affordability (Kumar & Nair, 2020). Due to the increased demand for contactless

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services and the treatment of chronic diseases, e-pharmacies have been increasingly popular, particularly during and after the COVID-19 pandemic (Gupta et al., 2021). Compared to traditional pharmacies, these platforms are well known for enhancing access to healthcare, giving a greater selection of products, and delivering discounts (Dey & Jayaswal, 2019). Notwithstanding these advantages, e-pharmacies nevertheless have to contend with a number of obstacles, such as unclear regulations, the risk of fake medications, and problems with prescription validation and data security (Kaur & Singh,2022). To guarantee the quality and safety of medications sold online, regulatory bodies in India and around the world are attempting to create explicit regulations (MoHFW, 2020). The efficiency and reliability of these services are being improved by the use of cutting-edge technology like blockchain, mobile health apps, and artificial intelligence (Sharma et al., 2021). These developments put platforms like Medicart at the vanguard of the future of digital healthcare, encouraging safer and more intelligent access to care.

V. PROBLEM DEFINITION

"Digital transformation has become increasingly necessary in the healthcare industry in recent years, particularly in the distribution and procurement of medications. Traditional pharmacies frequently deal with issues like long lines, restricted operating hours, geographic restrictions, and medication unavailability, all of which can be major obstacles for patients who need quick access to medications. By offering an online platform where consumers can easily explore, order, and have their prescription or over-the-counter (OTC) pharmaceuticals delivered right to their door, MediCart seeks to alleviate these problems. However, creating and running such a platform requires resolving a number of issues"

OBJECTIVES:

- Ensure 24/7 accessibility.
- Streamline medicine procurement.
- Enable Prescription Verification.
- Improve medicine availability.
- Guarantee safe and timely delivery.
- Enhance user trust and satisfaction.

IV. METHODOLOGY

The development of *MediCart* will follow a modular and agile-based approach, leveraging the MERN stack (MongoDB, Express.js, React.js, and Node.js) for full-stack JavaScript development. The methodology includes the following phases:

1. Requirement Gathering & Analysis

- Conduct user research through questionnaires and interviews with potential users (patients, pharmacists).
- Identify core features: user registration, medicine search, prescription upload, secure checkout, order tracking, and admin management.
- Define user roles: customer, pharmacist, admin.

2. System Design

- Design a scalable and modular architecture with clear API and component boundaries.
- Create UI/UX wireframes using tools like Figma or Adobe XD.
- Plan routing, user flows, and database schema (ERD design).

3. Technology Stack Overview

- Frontend: React.js with Redux (for state management), Axios (for API calls), Tailwind or Material-UI (for styling).
- Backend: Node.js with Express.js (RESTful APIs and server logic).
- Database: MongoDB (NoSQL database for flexible data storage).
- Authentication: JWT (JSON Web Tokens) for secure user authentication and authorization.
- File Uploads: Multer for handling prescription image uploads.
- Hosting:

•Frontend: Vercel or Netlify
•Backend: Render or Heroku
•Database: MongoDB Atlas

4. Development Phase

- Frontend Development (React.js):
  - Build responsive components for user dashboard, pharmacy listings, cart, order history.
  - Implement form validations, real-time search, and filter features.
- Backend Development (Node.js + Express):
  - Create RESTful APIs for user management, product catalog, orders, and prescriptions.
  - Integrate payment gateway (e.g., Razorpay or Stripe).
  - Handle prescription file uploads and validation.
- Database (MongoDB):

•Design collections for Users, Medicines, Orders, Prescriptions, and Reviews.
•Implement schema validations using Mongoose.

5. Testing

- Unit Testing (Jest/React Testing Library for frontend, Mocha/Chai for backend).
- Integration and API testing using Postman.
- Bug tracking and QA feedback loop using tools like Trello or Jira.

6. Deployment & Hosting

- Deploy the frontend and backend separately using cloud platforms (e.g., Netlify for React, Render for Express).
- Use environment variables for API keys and secrets.
- Ensure HTTPS and secure headers for user data protection.

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7. Maintenance & Scaling

- Monitor performance using tools like Google Analytics (frontend) and PM2 (backend).
- Enable logging and error tracking (e.g., LogRocket, Sentry).
- Plan for future scaling by containerizing with Docker and deploying with Kubernetes (optional for advanced phase).

V. IMPLEMENTATION

The implementation of *MediCart* was carried out by developing individual modules using the MERN stack. Each component of the system was built in phases to ensure modularity, scalability, and efficient debugging.

1. Frontend Implementation (React.js)

➢ Tools Used: React.js, React Router DOM, Redux (for state management), Axios (for API calls), Tailwind CSS/Material UI (for styling).

➢ Modules Implemented:

- User Interface: Home page, medicine search, product listings, product details.
- Authentication Pages: User registration, login, JWT-based session management.
- User Dashboard: Order history, prescription uploads, saved addresses.
- Pharmacist/Admin Panel: Add/remove medicines, track orders, manage inventory.
- Prescription Upload: Integrated file input using Multer on the backend and FormData handling on the frontend.

2. Backend Implementation (Node.js + Express.js)

➢ Tools Used: Node.js, Express.js, JWT, Bcrypt, Multer, Mongoose.

➢ Key REST APIs Created:

- User APIs: Register, login, get user profile, update profile.
- Medicine APIs: Add, update, delete, view medicines.
- Order APIs: Place order, track order, order history.
- Prescription API: Upload and retrieve prescriptions.
- Admin APIs: Manage inventory, users, and overall analytics.

3. Database Implementation (MongoDB + Mongoose)

➢ Collections Created:

- `Users`: Stores user credentials and roles (admin, pharmacist, customer).
- Medicines: Stores product data such as name, type, dosage, price, stock.
- Orders: Stores user orders and their status (placed, shipped, delivered).
- Prescriptions: Stores uploaded images linked to user and order.

➢ Security: Passwords encrypted with Bcrypt, JWTs used for route protection.

4. Authentication and Authorization

- JWT (JSON Web Token) used for user session management.
- Middleware created to restrict access to admin/pharmacist routes.
- Role-based access logic implemented both on frontend and backend.

5. Payment Integration

- Integrated Stripe API for secure online payments.
- Handled order confirmation post-payment with backend verification.

6. Hosting & Deployment

- Frontend: Deployed using Vercel.
- Backend: Deployed using Render or Heroku.
- Database: Hosted on MongoDB Atlas.
- Environment Variables: Stored securely using `.env` files (e.g., API keys, JWT secrets).

7. Additional Features

- Medicine Search with autocomplete.
- Cart functionality with quantity updates.
- Order status tracking.
- Email confirmation for orders and delivery status.
- Dark mode (optional UI feature).

VI. RESULTS AND DISCUSSION

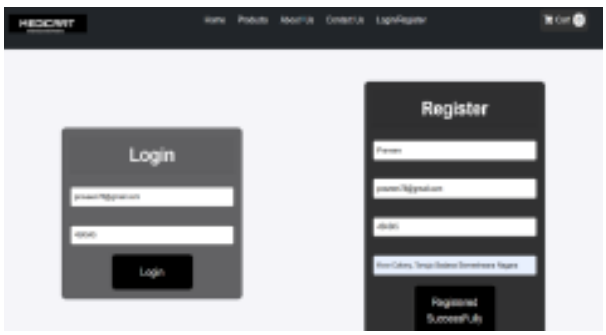

Fig 1. User Login/Registration

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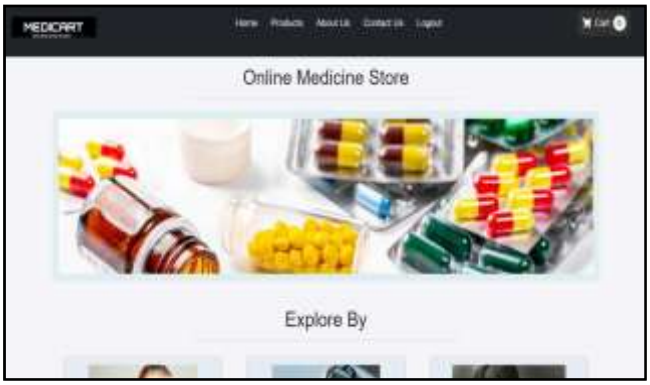

Fig 2. The Home Page for users to browse, and shop for Medicines easily

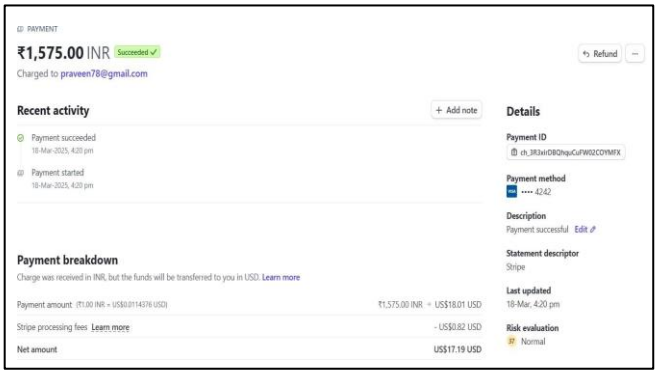

Fig 5. The Product Details Page shows medicine info, price, and purchase options.

Fig 3. The Catalogue Page shows medicines for browsing and shopping.

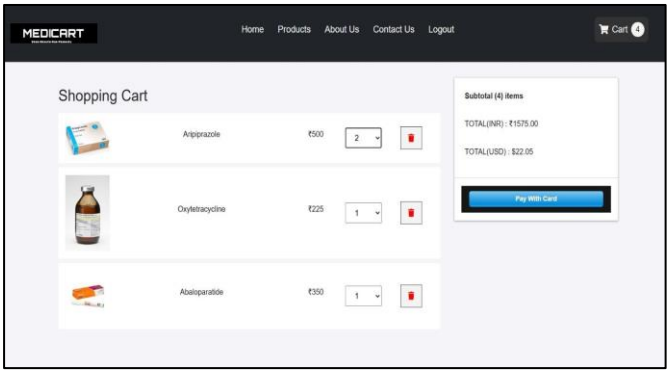

Fig 6. The Cart Page shows selected medicines for review and checkout.

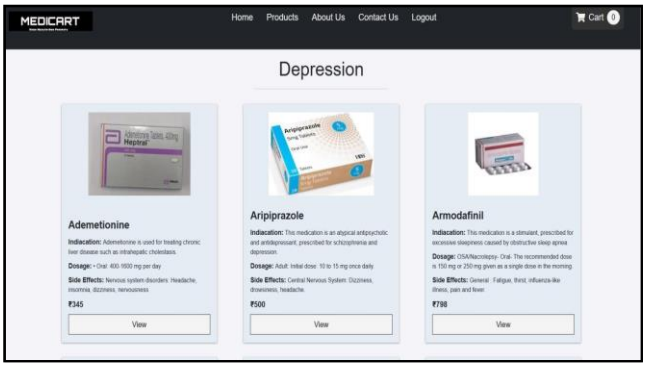

Fig 4. The Products Page shows medicines and viewing options.

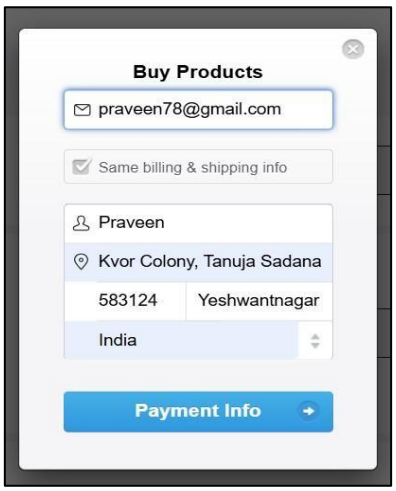

Fig 7. The Billing & Address Page collects payment and shipping details for checkout.

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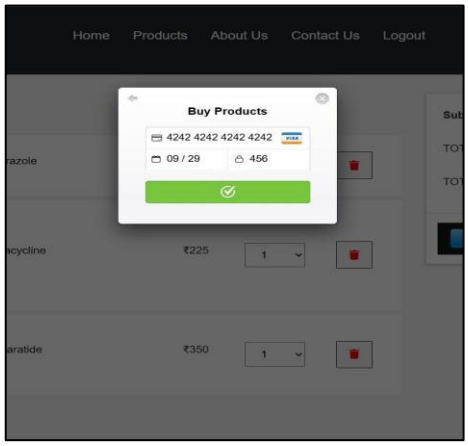

Fig 8. The Payment Page lets users to complete the purchase.

Fig 9. The About Us Page shares information about our website, its mission, and contact details.

Fig 10. The Contact Us Page provides ways to reach our website for support or inquiries.

Fig 11. The Payment Details Page captures payment information and confirms the transaction.

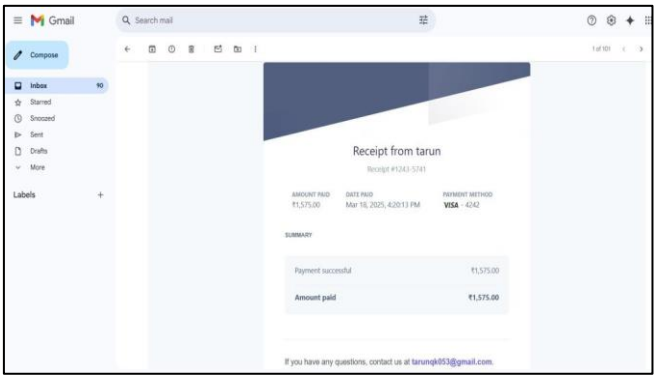

Fig 12. The Receipt Details Page shows the order summary, payment confirmation, and transaction details

VII. CONCLUSION

In conclusion, *MediCart* successfully addresses the challenges of traditional medicine procurement by providing a reliable, user-friendly online platform for ordering prescription and over-the-counter medicines. Developed using the MERN stack, the system ensures secure authentication, real-time inventory access, prescription validation, and timely doorstep delivery. By streamlining the entire process—from browsing medicines to completing secure payments—*MediCart* enhances convenience, accessibility, and efficiency for users. This project contributes to the ongoing digital transformation.

VIII. KEY FINDINGS

1. Simple to Use: Medicart allows customers to order medications online and have them delivered to their homes. 2. Saves Money: It provides sales and discounts that lower the cost of medications.

3. Additional Services: Online health examinations and doctor assistance are also available.

4. Huge Potential: Medicart can expand by providing additional online health services, despite certain obstacles.

IX. FUTURE DIRECTION

1. Increase Telemedicine: Provide more online medical advice and consultations with doctors.

2. Subscription programs: Give people with chronic illnesses simple monthly medication programs.

3. Faster Delivery: Increase delivery speed through partnerships and more local hubs.

4. Health & Wellness Emphasis: Increase the number of exercises, wellness, and personal care items.

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X. IMPACT

Medicart, as an online medicine store, has made healthcare more accessible and convenient by delivering medicines to people's doorsteps, especially benefiting those in remote or busy areas. It saves time, offers cost-effective options through discounts, and supports chronic care with easy refills and reminders. By promoting online consultations and digital health tools, Medicart is helping people manage their health more efficiently. Overall, it plays a key role in making healthcare simpler, faster, and more affordable.

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