E-PHARMACY

Project report submitted in partial fulfillment of the requirement for the degree of Bachelor of Technology

in

Computer Science and Engineering/Information Technology

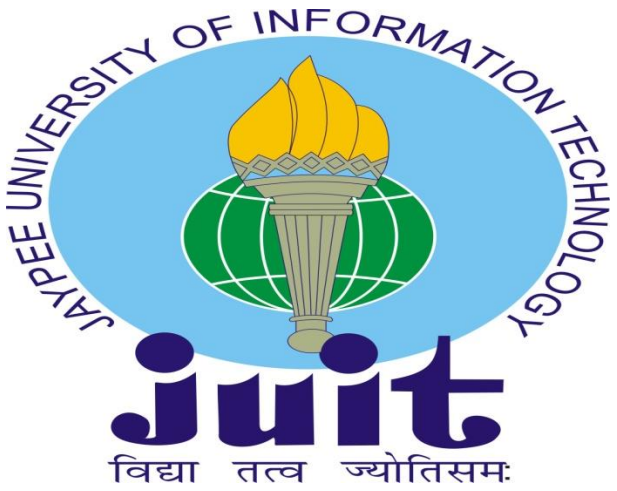
By

KAMAL SINGH 181264
PRABHAT RANA 181423

Under the supervision of

DR.RAJINDER SANDHU

to

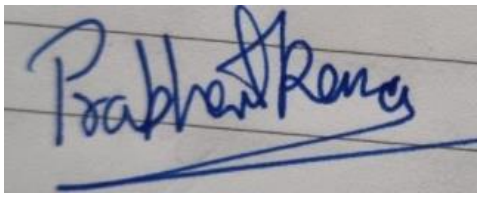


Department of Computer Science & Engineering and Information Technology
Jaypee University of Information Technology Waknaghat, Solan-173234, Himachal Pradesh

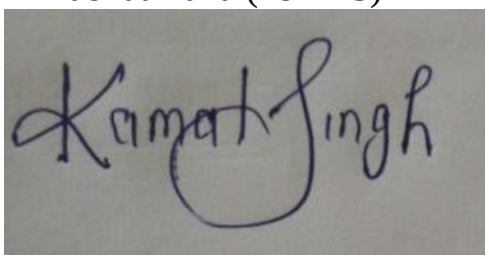
CANDIDATE'S DECLERATION

I hereby declare that the work presented in this report entitled **"E-Pharmacy"** in partial fulfillment of the requirements for the award of the degree of **Bachelor of Technology** in **Computer Science and Engineering/Information Technology** submitted in the department of Computer Science & Engineering and Information Technology**,** Jaypee University of Information Technology Waknaghat is an authentic record of my own work carried out over a period from December 2021 to March 2022 under the supervision of **(Supervisor name)** (Designation and Department name).
The matter embodied in the report has not been submitted for the award of any other degree or diploma.

(Student Signature)
Student Name, Roll no.

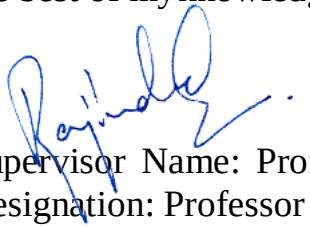


Prabhat Rana (181423)



Kamal Singh (181264)

This is to certify that the above statement made by the candidate is true to the best of myknowledge.



Supervisor Name: Prof. Dr. Rajinder Sandhu
Designation: Professor
Department name: Computer Science and EngineeringDated: 2-03-2022

ACKNOWLEDGEMENT

Firstly, We would like to express our heartiest thanks and gratefulness to almighty God for His divine blessing makes us possible to complete the project work successfully

We are really grateful and wish our profound indebtedness to Dr. Vivek Kumar Sehgal, Professor & HOD of the Department of CSE & IT, Jaypee University of Information Technology, Waknaghat.

Deep Knowledge & keen interest of my supervisor in the field of "Cloud Computing" to carry out this project. His endless patience, scholarly guidance, continual encouragement, constant and energetic supervision, constructive criticism, valuable advice, reading many inferior drafts and correcting them at all stages have made it possible to complete this project.

We would also generously welcome each one of those individuals who have helped us straightforwardly or in a roundabout way in making this project a win.

In this unique situation, I might want to thank the various staff individuals, both educating and non-instructing, which have developed their convenient help and facilitated my undertaking.

Finally, I must acknowledge with due respect the constant support and patients of my parents.

Regards,

Prabhat Rana 181423

Kamal Singh 181264
CSE | JUIT

ABSTRACT

Over the last decade, the issue of internet medication has plagued pharmacies and the broader healthcare community. Alternative choices for persons seeking medicine, with or without a prescription, are available on the Internet, and numerous experts have outlined the dangers and advantages. Peer-reviewed books and relevant remarks are examined in this review article to represent the advent of online pharmacy. While counterfeit medicine and the increased usage of internet drug information are strongly related to this issue, these articles are outside the subject of this work. Different opinions concerning customer motivation and knowledge while buying drugs online are revealed in this discussion. Misconceptions concerning online prescriptions are surfacing, such as the purchase of over-the-counter drugs and the lack of product information. Even at the start of the chaotic pre-regulation era, there is a strong thread defining excellent practice inside an online pharmacy.

While the advantages of having access to information at all times and maintaining privacy appear to be well-documented, the cost advantages are hotly debated. Despite indications that some illegal drug purchases are made online, research suggests that shops, family/friends, and legal prescriptions are the most common sources of conversion. Furthermore, despite complaints that the Internet cannot be managed, control techniques appear to have had a favorable influence on unlawful operations. Adequate consumer 'health education,' in compliance with existing legislation, is necessary to decrease injuries, yet even recent research reveals that many consumers lack access to technology. An online pharmacy can evaluate its potential to provide mental treatments alongside pharmaceuticals, which has a future in drug delivery. To avoid losing the new ‘strings' generation of future parents and caretakers, brick-and-mortar pharmacies should reflect the value they provide to their profession.

The main aim of developing this application is to provide all the medical related solutions through a single application. E-Pharma is a platform where patients and doctors can interact directly. Patients can self-diagnose from the direct doctor-patient relations, consumer experience in online purchases, the ease of mail-order trade and distance selling. The patient can consult with the doctor and can also order medicines which were prescribed by their doctors with just one click. Patients can also get information about the laboratories and medical shops present in their area.

Nowadays, Internet is used worldwide and due to this we have so many opportunities to use technology in best way like in medical related solutions. E-Pharms app will provide quick delivery and a user-friendly environment for the patients. Patients can take quick treatments in order to improve their health. Patients can interact with chats by telling their problems and also via- phone and e-mail.

The application will be helpful, informative and beneficial for a vast majority of people and has the potential of easing people’s lives in diverse ways

TABLE OF CONENT

LIST OF ABBRIVATION

- WHO - World Health Organization
- CAGR – Compound Annual Growth Rate

Chapter-1 INTRODUCTION

1.1 INTRODUCTION

The demand for medical and medical services outstripped the fluctuating ocean currents as COVID-19 travelled throughout the globe. On the one hand, the globe was in desperate need of COVID-related health infrastructure, but demand for common services and medications was declining. Consumers and individuals throughout India are resorting to online delivery for practically every necessity, including groceries and gadgets, due to the closure and possibility of COVID19 infection.

We may give an Internet Forum as part of our programmed to interact with persons who operate pharmacy management or merchants. We can supply a web application utilized by physicians or any hospital personnel in this programmed, and we have established a single quotation for user and customer, so we can place our product in our system, and the buyer may buy it, as well as order or submit a quote to our system. Testing and interpretation of medical prescriptions, medication administration, prescription drug withdrawals from certified physicians, prescription drug reviews, and appropriate drug preservation are all part of pharmacy profession.

The American Pharmacists Association defines pharmacy as a role responsible for assuring correct and appropriate medication usage, as well as the utilization of pharmacological resources in order to produce improved medical results, including birth control. Some argue that the rise in global life expectancy from 45 to 50 years is due to the number of triumphs documented in pharmacies during the last century.

- Due to restricted access to pharmacies, rural India's medical requirements are overlooked. Despite e-ever-expanding commerce's transportation network over the preceding decade, e-pharmacies are restricted in their ability to provide access to medical services that do not reach a large number of people. E-pharmacies already have over 20,000 pin codes accessible, with the number projected to expand.

- According to a WHO report, 10.5 percent of medications distributed in low- and middle-income countries, including India, are of poor quality and unprofitable. E-Pharmacy enables on-time delivery of medications by receiving them directly from licensed producers and merchants.

- Traditional supply networks are less established and contain fewer regions, resulting in waste and greater costs for consumers. e-pharmacies with cost-effective purchasing strategies, efficient supply chains, and asset management that result in lower end-user pricing

- A medium-sized offline pharmacy can only offer 6,000-8,000 SKUs, whereas an online pharmacy can offer 50,000+ SKUs, giving pharmacies a significant edge. Math and AI / ML in pharmacy can better control their supply chain, ensuring a high 95 percent filling rate and avoiding common stock-outs at traditional offline pharmacies, thanks to a digital backend.

- Economic Feasibility - In the creation of any company's software, economic feasibility is critical. Our proposal is economically viable due to the availability of the essential hardware and software.

- Operational Feasibility - As the system develops in the area where it will be used, tracking software-related functions are always monitored by them and adequate support is available.

1.2 Objective

Although many publications discuss how e-prescribing helps patients get vaccinations and avoid prescription mistakes, public pharmacies will gain as well.

Improving patient safety is crucial. An estimated 1.5 million cases of drug abuse occur in the United States each year, costing the country $ 3.5 million in health-care expenditures.

Patients benefited financially from the programmed, according to a study that looked at the impact of software on treatment decisions. Over the course of a year, software-based suppliers created 26,674 new orders for an average of $ 4.12 less than non-software providers (P =.003).

The electronic preservation of medical information is critical in situations where the patient's safety is at risk, such as natural disasters and medication recalls. Because medical data was readily available during Hurricane Katrina in 2005, patient treatment was not completely halted.

The e-pharma system's ultimate goal is to give all medical treatments through a single smart phone app. The application aims to do this by meeting the following objectives.

To develop an app-based platform that enables doctors and patients to communicate directly with laboratories and pharmacies for their mutual benefit.

Patients would be able to make appointments for consultations, medical visits, or sample collection for diagnostic purposes, as well as contact local pharmacies with drug-related inquiries.

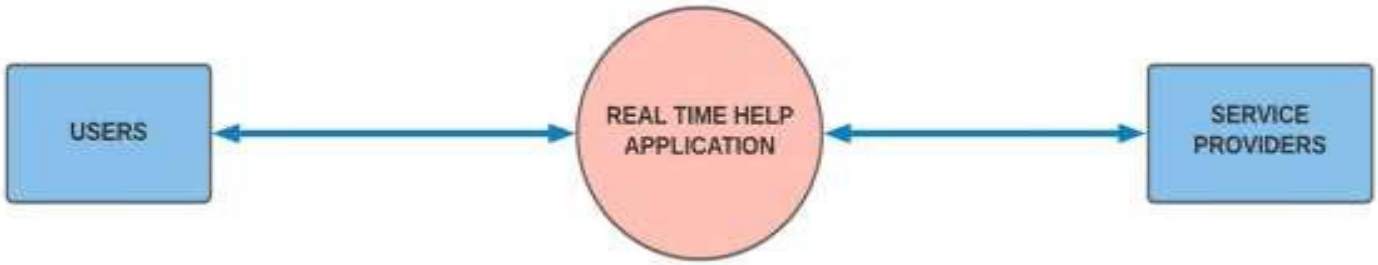
Doctors would be able to log in with their information, and users would be able to find them simply searching the pin code of their neighborhood.

By providing separate login interfaces for patients and physicians, we want to create a user-friendly, informative, and useful programmed, especially for older people.

By providing a chat platform for users to connect with one another directly.

To aid patients, especially during emergencies or epidemics.

The goal of this study is to learn everything there is to know about the project "RealTime Medical Help Application: By the People, for the People." The project's goal is to get up-to-
date COVID19 information, as well as information on locations with high, medium, and low epidemiological burdes , and to deliver it on nonmobile platforms. To locate hospitals and determine whether physicians and medical faciliti es are available. Check the availability of drugs in different medical stores based on your location and zip code, mak e online appointments, and get free first-aid advice.
The following are the main goals: • Provide current COVID-19 information.
• Data on locations with a high, medium, or low epidemiological load, as well as nonmobile platform deployment.
• To locate hospitals and determine whether physicians and medical facilities are available.
• Determine the availability of drugs in various medical stores based on location and zip code.
• Online appointment scheduling as well as free first-aid information.



1.3Methodology

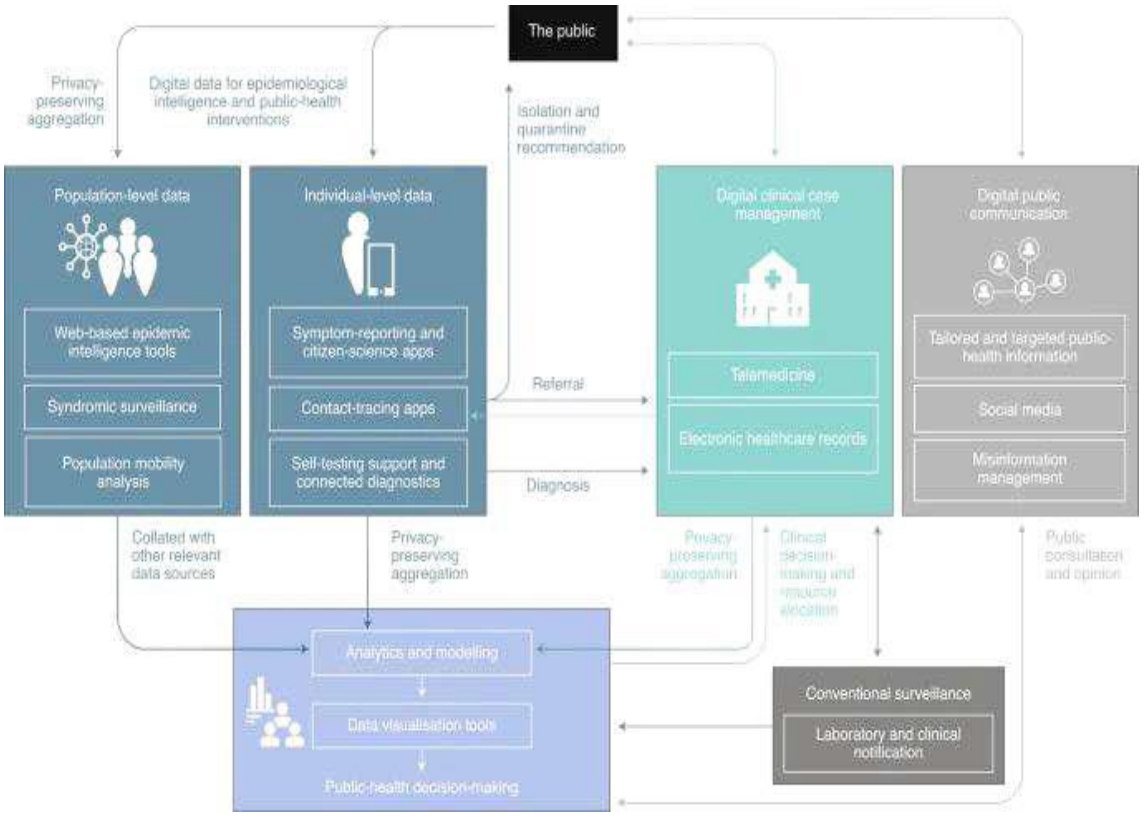
Section 1: This section reads the first phase's required prerequisites and configures the system. This application allows both physicians and patients to register and log in. E-Pharmacy is easy to navigate and order from. The customer selects the medicines they require and places a purchase with only one click. Prior to that, the customer must create a login account and complete all essential fields, such as name, address, and phone number. Doctors can sign up by providing the required information. After properly registration, the doctor can log in using a username and password.

Section 2: The application provides access to the pharmacy and lab support. The user may find a nearby medical store and place an online medicine order. This software may be used to contact Lab managers if you have an Android phone. They may connect with them and learn more about them with this app.

Section 3: This phase comprises an examination of the existing system once the present system limits have been analyzed and improved. Some new features have been added.
At this stage, they're also presented as a lab test. Users can use this programme to contact well-known officials.

Section 4: In the future, the following features may be added to this application.
video conversations with doctors to address concerns and access the Internet, as well as ins tructions On this page, we'll be sharing patient medical reports.

Overall Proposed System Architecture:



1.4 Problem Statement

Insufficient service advertising, lack of coherence of pharmacy services in hospitals, inadequate drug information systems, and inconsistency of pharmacy information management owing to manual procedures plagued most pharmacies.

Challenges:

1. For governing e-pharmacies in India a tactile laws in need
2. To sell of drugs to the minors
3. Reach of technology driven model to illiterate people due to lack of knowledge about internet
4. Speed of internet
5. Prescription related issues
6. Legality of electronic signature
7. Identity and reliability of legal e-pharmacy
8. Protection of consumer rights
9. Security and confidentiality of information exchanged
10. Security of financial transactions
11. Regulatory control over e-pharmacies operating outside the jurisdiction of India
12. Unclear laws on inter-state transfer of drugs/medicines.
13. Drug importation and re-importation issue

People have a tendency to buy medicines from nearby stores that too without prescriptions. Their expectation as well as perception towards e-pharmacy is low due to the relation build with the nearby pharmacist. Also, the easy availability and discounts given by them, makes them their preferred partners. The usage of e-pharma varies across India, depending on the need of people and awareness level. The necessity of prescription in E-pharma, makes it a more difficult choice for buying medicine. Hence to build awareness for e-pharma for 1MG and knowing the consumer expectation and prescription towards the company, marketing activities and brand building was undertaken.

1.5 Organization

The project report is broken down into 5 sections. The first chapter covers the background and motivation for the proposed application, the problem statement and aims to answer the issue statement, the recommended technique or research, and the highlighting of successful proposed applications. Chapter 2 illustrates the literature survey of the project from which we took the references. The system development chapter includes the site map, use case diagram, activity diagram, and system wireframe, which is the proposed application's user interface. Software design approach, tools, requirements, system performance specifications, and timescales are discussed in Chapter 4. The fifth chapter concludes the implementation, project evaluation, benefits and future scope of the project.

CHAPTER-2 LIERATURE REVIEW

Online medication transactions are well-known for their convenience. The Indian pharmacy business is enormous; the sector is projected to be over Rs1.2 lakh crore, with the internet pharmacy market being just Rs 700-800 crore.

By 2024, E-Pharmacy is predicted to increase at a CAGR of more than 20%, hitting the $ 3 billion milestone. Online pharmacies provide privacy, a wide range of options, affordable pricing, and, most importantly, luxury. E-pharmacy increases customer convenience and accessibility, and it will assist older people with chronic diseases who need to visit a drugstore to obtain medication. Patients may also get direct counsel from qualified doctors without having to go to a hospital and pay expensive costs.

The WHO is worried about internet marketing that might bypass national drug regulatory agencies, allowing unlicensed, fraudulent, hazardous, or ineffective medical items to access the market.

Ecommerce's function, responsibilities, and liabilities in markets and product sellers must be well defined. The rise in internet and smart phone users in India is demonstrating that online pharmacy has a bright future in India, albeit there will be some hurdles along the way.

1mg, Net meds, Chemist, Myra, Midlife, and others are currently the best pharmacy players. Approximately 150 internet pharmacies exist now.

Bestseller in India the pharmaceutical industry is divided into three categories: generic pharmaceuticals, illicit drugs, and patented goods. The Indian medical sector's most generous section is pre-manufactured medications, which account for around 70% of income, while illegal drugs and patented drugs account for 21% and 9%, respectively. In this case, the market for infection is nearly 15.17 percent, followed by 12.47 percent for cardiovascular drugs, 11.75 percent for stomach drugs, 8.78 percent for vitamins, minerals, and nutrients, and 8.13 percent for anti-diabetes drugs.

E-pharmacies are newcomers to the Indian e-commerce scene, with the government and investors paying more attention to them in the last three to five years. Today, the E-pharmacy business is worth over a billion dollars, with more than 30 companies aiding the segment's growth in various Indian regions. Currently, India has around 850,000 independent pharmacy retail stores that can only supply 60% of total domestic therapeutic demand. Traditional Brick and M0rtal Retail pharmacies presently account for 99 percent of yearly pharmaceutical sales, with online

pharmacies accounting for only 1% of total therapeutic sales. In the E-commerce business, the online pharmacy market is slowly gaining traction, with an amazing market penetration rate in Both rural and urban areas of India are affected. Several entrepreneurs and investors are interested in being involved in the fast-growing E-pharmacy market. Recent legislation governing online pharmacy regulation has resulted in significant funding and investments in companies and initiatives joining the Indian E-pharmacy market. This provides an amazing opportunity for online pharmacies to expand into a lucrative area with higher 11 profitability. The rise in the number of Indians suffering from chronic clinical indicators such as diabetes, hypertension, asthma, and obesity is fueling the growth of the Indian E-pharmacy industry, resulting in higher need for medicines. Furthermore, government efforts and programmed such as digital India, Jan Aashaadha programmed for generic pharmaceutical promotion, & other rural portions of India (where more than 60% of the Indian population lives) are significant characteristics that make the e- pharmacy segment a burgeoning future industry. Despite being a new market in the Indian E-commerce business, it is expected to grow at a CAGR of more than 20% by 2024, surpassing the US$ 3 billion milestone. The report on the 'India E-Pharmacy Market' provides a comprehensive look at the present state of e-pharmacy in India. It provides an in-depth examination of the segment's market dynamics, trends, benefits, and consumer behaviors analysis, with a focus on the key untapped opportunity areas. The report also includes the most up-to-date information on regulatory requirements and a cost analysis of opening an online pharmacy in India. The report concludes with a discussion of the present issues that the Indian online pharmacy sector is facing, as well as potential adjustments that may be done to ensure optimum profitability in this profitable segment.

Since a decade, e-commerce has been one of India's most prosperous and growing industries. With fierce competition for market share between companies like Flipkart and Amazon. It's been a long journey for them from stories to reality. There were numerous e-commerce companies at first, but now there are just a handful.

The online pharmacy, sometimes known as E-pharmacy, is one of numerous areas of E-commerce that has received little attention but has a lot of potential. In India, it is a new domain or sector. E-commerce is now a burgeoning and competitive business in India, with fierce competition among domestic and global industry behemoths like Amazon and Flipkart vying for a majority share of the market. The online pharmacy sector, often known as E-Pharmacy, is one of the many categories of e-commerce that remains mostly untouched and has tremendous future potential.

The inclusion criteria were satisfied by 73 publications published between 2008 and 2014. Overall, 12 of the 73 publications (16%) focused primarily on the advantages and benefits of e-prescribing. A total of 14 papers (19%) mentioned various forms of e-prescribing problems, costs, and hazards. E-prescribing error-causing situations and variables were mentioned in five studies (almost 7%). Eleven publications (almost 15%) dealt with the obstacles and contributing factors that impact e-prescribing uptake and implementation. In comparison to traditional prescription approaches, 31 research (almost 43 percent) looked at the advantages and dangers of adopting e-prescribing. The bulk of the research were done in North America (almost 64% in the United States and 4% in Canada), with 16% addressing e-prescribing systems in European contexts, 9% in the Asian environment, and 4% in the Middle East. And the remaining 7% discussed e-prescribing issues in Australia.

study design	Method	Number of studies
Qualitative	Interview	16
	Direct observation and follow-up interview	12
	Conceptual or reflective paper	4
	Literature review	7
Quantitative	Survey	16
Mixed (qualitative and quantitative)	Focus group and survey	10
	Direct observation and survey	8
Community pharmacies	21	
Hospital-based	14	
Primary care clinic	12	
Private practice	9	
Ambulatory care clinic	8	
Hospital owned-office based	6	
University health centre	3	

Table 3. Participants/professional groups of included studies

Participants/professional groups	Number of studies
Pharmacists	19
Pharmacists and pharmacy staff	7
Pharmacy staff	14
Physicians	12
Nurses and physicians	9
Clinicians and medical office staff	8
Multidisciplinary team (clinicians, pharmacists, and researchers)	4

Table 4. Classification of e-prescribing benefits

Benefits	Percentage of studies
Medication error rate reduction	83%
Saving health care costs	81%
Improving the quality of healthcare services and patient safety	76%
Facilitating the coordination of care and communication with other providers	68%

Benefits	Percentage of studies
Cutting pharmacy costs through reduced redundancy	63%
Improving the efficiency in the workflow of prescribers	57%
Speeding up prescription refill requests	48%
Facilitating the management of medication stocks	41%
Informing prescribers about patients' insurance coverage	36%
Improving patient convenience	32%
Checking patient adherence to medication to complete treatments	30%
Facilitating clinical decision making by providing decision support features (such as checking for drug–drug, drug-allergy and drug–dose interaction)	26%
Providing updated information about medication formularies	21%
Reducing wait times and increasing patient satisfaction with pharmacies	18%
Reducing the possibility that prescriptions are erased or lost	11%

Table 5. Classification of e-prescribing risks and concerns

Risks and concerns	Percentage of studies
Failure to properly implement e-prescribing	76%
Cost of e-prescribing implementation and maintenance	69%
Emergence of e-prescribing errors (such as wrong strength, wrong quantity, dose and drug selection, direction, duplicate e-prescriptions)	65%
Lack of standardized e-prescribing software	57%
Threats to patient safety due to inappropriate drug therapy	53%
Increasing medication cost	50%
Increasing work responsibilities and imposing an excessive burden for pharmacy personnel (such as performing additional checks involved in error recovery)	44%
Reducing pharmacy workflow efficiency due to additional transaction cost	38%
Time required to integrate e-prescribing into workflow	31%
Lack of computer support services	28%
Distracting e-prescribing system design features (such as poor drop-down menus, screen design and inaccurate patient medication)	25%
Heterogenous e-prescribing database management systems	23%
Unclaimed e-prescriptions	21%
Complicated EHR systems with robust CDS for e-prescribing	18%
The cost of training for medical staff	16%

Risks and concerns	Percentage of studies
The restrictions placed on prescribing controlled substances electronically	12%

Because internet drug purchases are very new, there is limited literature accessible. Online medicine/medical goods buying has less research publications accessible. There are few study studies available that demonstrate the advantages of selling pharmaceuticals and medical items online. More people are turning to the internet for pharmaceuticals and health supplements as their internet usage grows. However, factors associated with using the internet for shopping are hardly considered.

CHAPTER-3 System Design

3.1 RESOURCES

HARDWARE

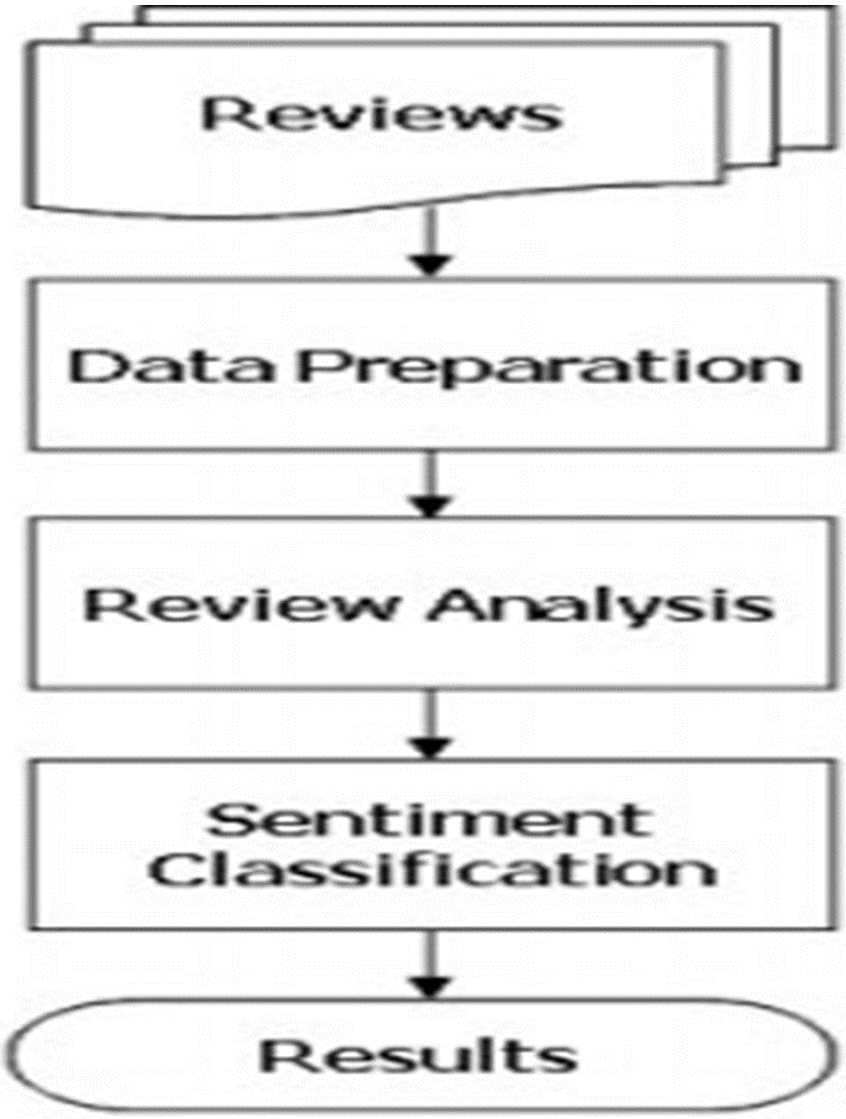
- A physical memory (RAM) of 4 GB and above are required
- Android mobile phone
- Hard disk capacity: Maximum 5 GB
- Laptop
- USB Cable

SOFTWARE

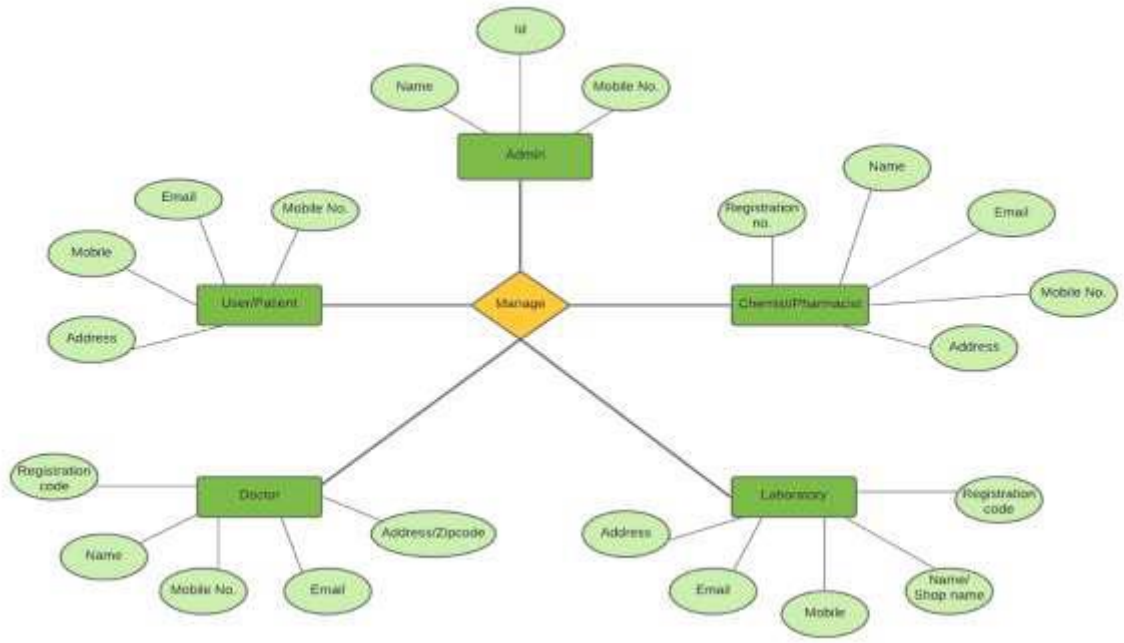
- Operating System: Windows
- XAMP
- **SQLog**
- Structured query language (SQL)

	Brief Description of Work
First Review	Collecting the idea and approach towards development of the software followed by proper analysis of the users requirements and usability.
Second Review	Gathering information about the tools and technologies required on the basis of prior practices. After getting knowledge about the technologies and tools involved in maintaining such software. Updated the systems with the useful requirements.
Third Review	Started with the initial step of developing the software. Primarily, I created the blueprint of web activities to understand the flow of the application.
Final Review	Developed login and registration activity and implemented user authentication in applications for security.

3.2 Steps


Reviews
Data Preparation
Review Analysis
Sentiment Classification
Results

3.3 E-R DIGRAM



WORKFLOW

While developing this application, we took the following steps to understand the present situation in medical facilities available to the public and to attempt to help them by creating a database with the necessary data and providing it to those in need through the application we created. The following are the steps in the development process:

Phase 1: Planning and Analysis of Requirements
Phase 2: Requirements Definition
Phase 3: Designing the Product Architecture
Phase 4: Building or Developing the Product
Phase 5: Product Development
Phase 6: Market Deployment
Phase 7: Maintenance

We've broken down our workflow into seven main modules to cover the aforementioned steps for an efficient app development process, ensuring that our medical app development project is a success and achieves its goals.

Modules include:
Module 1: Strategy: Framework and Design
Module 2: Website Designing: Analysis and Planning
Module 3: UI/UX Design: Choosing and Implementing Tabs and Features
Module 4: App Development: Mobile Version Optimization
Module 5: Debugging, Reworking, or Testing
Module 6: Installation and Support
Module7:Documentation

Tools And Technologies Used:

HTML5: Hypertext Markup Language (HTML) is a markup language for texts that are intended to be viewed in a web browser. Technologies such as Cascading Style Sheets (CSS) and programming languages like JavaScript can help.

Web browsers accept HTML documents from a web server or locally stored files and convert them to multimedia web pages. HTML initially featured cues for the document's look and described the structure of a web page logically.

HTML elements are the components that make up HTML pages. Images and other objects, such as interactive forms, can be embedded in the produced page using HTML structures. HTML allows you to build organised documents by indicating structural semantics for text elements like headers, paragraphs, lists, links, quotations, and other elements. Tags, which are written in angle brackets, separate HTML components. Tags like introduce content to the page directly. Other tags, such as surround and include, offer information about the content of the document and may incorporate other tags as sub-elements. Browsers do not show HTML tags; instead, they utilise them to comprehend the page's content.CSS: CSS stands for Cascading Style Sheets. It is the language for describing the presentation of Web pages, including colours, layout, and fonts, thus making our web pages presentable to the users.

CSS is a style sheet language for the web. It may be used with any XML-based markup language and is not dependant on HTML. Let's try to decipher the acronym:

• Falling Styles in Cascading Styles

• Style: Adding designs and styling our HTML elements • Sheets: Using our style in many documents

Internal CSS

• We may apply styles within the HTML file using the style element

• Redundancy is eliminated

• However, the concept of separation of concerns is still lost • Uniquely applied on a single page

External CSS

• We may use the link> tag in the head tag to add styles.

• A reference is added

• The file is stored with a.css extension

• Redundancy is removed

• The concept of separation of concerns is preserved

• Each document is treated differently

PHP began as a tiny open-source project that grew in popularity as more people realised how beneficial it was. In 1994, Rasmus Larder released the initial version of PHP.

PHP stands for "PHP: Hypertext Pre-processor," which is a recursive acronym.

- PHP is an HTML-embedded server-side programming language. It's used to manage dynamic content, databases, and session monitoring, as well as to create full e-commerce websites.
- • PHP is pleasingly speedy in its execution, especially when compiled as an Apache module on the Unix side. It is integrated with a variety of major databases, including MySQL, PostgreSQL, Oracle, Sybase, Informix, and Microsoft SQL Server. Once launched, the MySQL server performs even the most sophisticated queries with large result sets in record time.

• PHP supports a wide range of popular protocols, including POP3, IMAP, and LDAP. PHP4 included support for Java and distributed object architectures (COM and

CORBA), allowing for the first time n-tier programming.

- PHP is forgiving: The PHP programming language makes every effort to be as forgiving as possible.
- PHP syntax is similar to C.

Why use PHP

PHP is a server-side programming language for creating dynamic web applications that leverage the MySQL database.

- It manages the website's dynamic content, database, and session tracking.
- PHP allows you to create sessions.
- It can read and write to the cookie's variable.
- It aids in the encryption and validation of data.
- PHP supports a variety of protocols, including HTTP, POP3, SNMP, LDAP, IMAP, and others.
- You may restrict user access to certain sections of your website using PHP.
- PHP can handle the forms, such as - collect the data from users using forms, save it into the database, and return useful information to the user. **For example** - Registration form.
- One of the most important reasons to learn PHP is that it is simple to install and configure.

- PHP can handle forms, such as gathering user input via forms, storing it to a database, and delivering useful information to the user. For instance, registration o It can access and set cookies variables.

- It aids in the encryption and validation of data.

- PHP supports a variety of protocols, including HTTP, POP3, SNMP, LDAP, IMAP, and others.

- You may restrict user access to certain sections of your website using PHP.
- PHP is the finest programming language since it is simple to install and configure.

AngularJS is a framework for building dynamic web applications. It allows you to utilise HTML as your template language and enhance HTML's syntax to represent the components of your application simply and concisely. Data binding and dependency injection in AngularJS remove a lot of the code you'd have to write otherwise. And because it everything happens in the browser, it's a great companion for any server technology.

If HTML had been developed for apps, it would have been AngularJS. For static texts, HTML is an excellent declarative language. It does not provide much in the way of application development, therefore designing web apps is a game of "what can I do to get the browser to perform what I want?"

- The impedance mismatch between dynamic applications and static texts is frequently remedied by using:

• A library is a set of functions that may be used to create web applications. Your code is in charge, and it uses the library only when necessary. Consider jQuery.

• frameworks - a specific web application implementation in which your code fills in the specifics. The framework is in control, and when it requires anything app-specific, it calls into your code. Duran Dal, ember, and so on.

AngularJS takes a different route. By developing new HTML structures, it seeks to reduce the impedance mismatch between document centric HTML and what an application requires. AngularJS uses a feature called directives to teach the browser new syntax. Some examples are: Data binding, as in {{}}.

• DOM control structures that allow you to repeat, display, and hide DOM pieces.

• Adding additional behaviour to DOM elements, such as processing DOM events.

• HTML is organised into reusable components.

- JQUERY: John Regis created jQuery in 2006 with the motto "Write less, do more." For rapid web development, jQuery simplifies HTML document traversing, event handling, animation, and Ajax interactions.
- Features of jQuery
- By writing less code, jQuery makes numerous programming jobs easier. The following is a list of jQuery's most essential fundamental features.
- DOM manipulation Using the cross-browser open-source selection engine Sizzle, jQuery makes it simple to choose DOM elements, negotiate them, and edit their content.

- Event handling jQuery provides an intuitive approach to capture a range of events, such as a user clicking on a link, without having to add event handlers to the HTML code.
- AJAX Support jQuery can assist you in developing a responsive and feature-rich site that uses AJAX technology.
- Animations jQuery has a number of animation effects that you may utilise in your webpages.
- Small size jQuery is a small library, weighing only at around 19KB (Minified and zipped).
- Cross-Browser Support jQuery is cross-browser compatible and works well with Internet Explorer 6.0+, Firefox, and Safari 3.0+.
- Up-to-date technology jQuery now supports CSS3 selectors as well as basic XPath syntax. MySQL is written in the C and C++ programming languages. Although its SQL parser is developed in , it employs a custom lexical analyser. MySQL runs on AIX, BSDs, FreeBSD, HP-UX, Eco Station, IRIX, Linux, macOS, Microsoft Windows, NetBSD, Novell NetWare, OpenBSD, Open Solaris, OS/2 Warp, QNX, Oracle Solaris, Symbian, SunOS, SCO Open Server, SCO UnixWare, Sano's, and Tru64. MySQL has also been ported to OpenVMS.

The MySQL server software and client libraries are distributed with dual-licensing. They are available under the GPL version 2 since June 28, 2000 (which was extended in 2009 with a FLOSS License Exception) or under a proprietary licence.

The official manual can provide assistance. Free assistance is also offered in many IRC channels and forums. Oracle's MySQL Enterprise packages provide premium support. They differ in terms of service breadth and cost. Additionally, third-party organisations such as MariaDB and Persona exist to provide support and services.

Reviewers noted that MySQL "performs really well in the average scenario" and that the "developer interfaces are there, and the documentation (not to mention feedback in the actual world via Web sites and the like) is very, very excellent." It's also been verified as a 'fast, reliable, and real multi-user, multi-threaded database server.'

Database and website developers have spoken out loudly about their favoured options. MySQL is the second most common database as of June 2020, after only Oracle. If we accept the premise that this decision is not taken without careful examination of the alternatives, there must be strong reasons for choosing MySQL. As it turns out, this indeed is the case.

MySQL is an open-source database platform that may be utilised without the expense of a commercial database platform. This aspect makes MySQL appealing to individuals and companies seeking a cost-effective growth path. MySQL is an example of free software that delivers on its promises and exceeds expectations. It's utilised for a wide range of personal and corporate applications, resulting in a growing community of developers that have used MySQL to solve database problems.

MySQL is incredibly scalable, which is a feature that is ideal for an eCommerce website. Resource consumption may be modified to avoid waste and improve performance as seasonal needs change. MySQL's financial transactions are safe since they are regarded as a single entity. For the transaction to be cleared and client accounts debited, all activities must be performed successfully. This is an important consideration when conducting business over the internet, as user connectivity might suddenly vanish at any time.

API (Application Programming Interface): An API (Application Programming Interface) is a set of methods that allow programmes to interface with external software components, operating systems, or microservices.

To put it another way, an API takes a user answer and sends the system's response back to the user. You click "add to cart," and an API notifies the website that you've added a product to your shopping. The website adds the item to your cart, and your cart is updated.

When it comes to APIs, you may hear the term "microservices." These, on the other hand, are not the same. Microservices are a web application design or architecture that splits functionality. A web application's API is the mechanism via which developers interact with it. Microservices may really connect with one another through APIs.

API allows a developer to transmit or receive data by making a specified "call" or "request." JSON is the programming language used for this communication. It can also be used to perform a specific action, such as changing or removing information. API requests can be done in four different ways:

1. GET – Information is gathered (Pulling all Coupon Codes)
2. PUT — Updates data fragments (Updating Product pricing)
3. POST – Produces (Creating a new Product Category)
4. REMOVE – (Deleting a blog post)

Everyday Examples of APIs

APIs enable developers send information to users fast and are widely utilized in today's society. You may do everything from online shopping to perusing a social media app to playing a game on your smartphone. API is used every time you visit a webpage on the internet. Here are some real-world instances of how you can be using API without even realizing it.

Going to a bank.

Consider yourself a user, a bank teller as an API, and the bank as the system with which you interact. When you want to withdraw money from your account, you approach the teller(API) and tell them, "I'd like $1,000 from this account." The teller (API) then goes to the back and informs the bank manager (the system) that "Mr/Ms .X would like $1,000," and the bank manager (the system) gives the teller (API) $1,000, which you finally get. As you can see, the API serves as a conduit between you and the system.

Searching for hotels.

When you visit a travel website, it may be linked to ten other websites in order to get you the greatest offer. You submit this request to ten different travel sites when you provide specifics like Atlanta, 2 nights, 1 room. The API sends your request for that precise location, date range, and room to ten sites, who then respond with the discounts they discovered. You examine the ten offers and select the best one. Once again, the API serves as a conduit for your queries.

Finding a Facebook profile.
The API tells Facebook's servers that you're looking for John Smith when you stalk him on Facebook. Facebook then provides you a list of all the people who have the same name as you (with factors like vicinity to you, or mutual friends). You can now locate John Smith! your ex-boyfriend? Hopefully not, but APIs make it simple to do so!

Finding a new restaurant.
Let's pretend you're visiting a new city or state. You've just dropped off your belongings at the hotel and decided to get a bite to eat. You take out your smartphone and search for local restaurants. Immediately outside your hotel, you are shown hundreds of local restaurants. They can simply show business hours, ratings, phone numbers, and even times when they are likely to be busy thanks to Google Maps API.

Staying up to date on social media.

You're stuck in a cab while in rush hour traffic. The worst, I know! You decide to kill some time and decide to catch up on what's happening in the world of sports. You open Twitter and navigate to the 'Sports' section. Twitter's API allows you to easily see various tweets relating to your favourite team winning the play-offs.

Bootstrap is a free and open-source CSS framework that aids in the building of a responsive device-friendly mobile-first front-end web page. Bootstrap offers CSS (Cascading Style Sheets) and an optional JavaScript-supported design template (plug-ins) for typography, button implementation, forms, and other user interface components. This framework aids web development by allowing developers to create responsive web pages more quickly.

Bootstrap's History
Twitter Blueprint was the original name for Bootstrap, which was created by Mr. Mark Otto and Jacob Thornton at Twitter. It was released as an open-source project on GitHub in August 2011. The framework was primarily created to promote web page consistency and stability across internal technologies. Before Bootstrap, several external libraries were utilized to create responsive webpages and interface development, resulting in inconsistencies and a high maintenance load.

- Why should Bootstrap be used by developers?
- Here are some of the most common Bootstrap applications:

- Browser compatibility: The Bootstrap Framework is compatible with all browsers.

- Mobile-first approach: The Bootstrap 3 framework has a mobile-first style that is used across the library rather than as distinct files.

- Easy to use: If you know HTML and CSS, you can get started with Bootstrap right away, and documentation is available on the official site.

- Responsive design and appearance:

- Responsive CSS is used in Bootstrabased web sites to change to the screen size of h uge computers, laptops, tablets, and smartphones.

- Easy customization: It comes with several prebuilt components and featurs that are simple to change.

- Developers: Bootstrap framework provides a fresh and unified interface.
-
- It is an open-source framework with web-based customization.

Benefits of Bootstrap Framework

• There are fewer cross-browser bugs.

• It is a lightweight and commonly used framework for constructing responsive webpages, as it is supported by all browsers and includes CSS-based compatibility solutions.

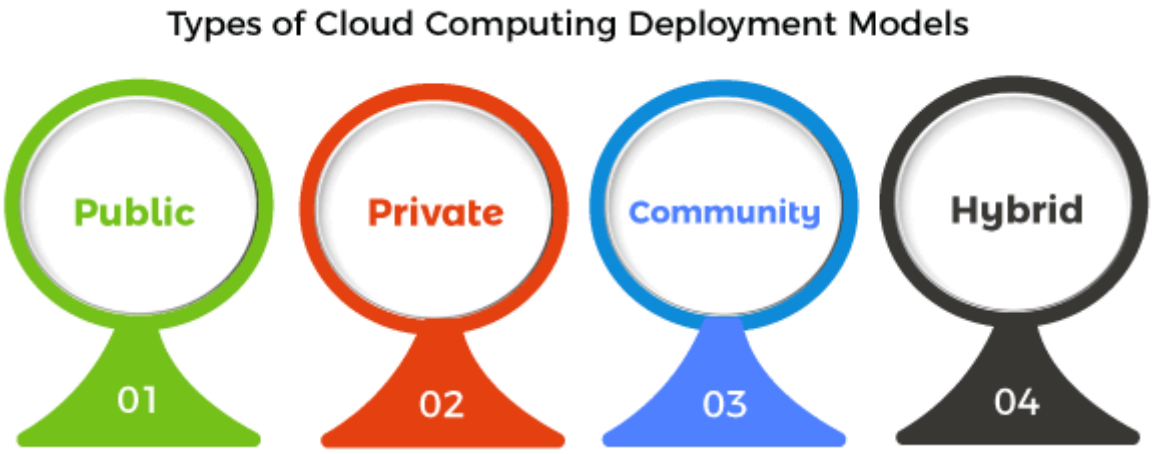
• Looks, structure, and styles may all be altered to suit your needs.

• A straightforward grid system.

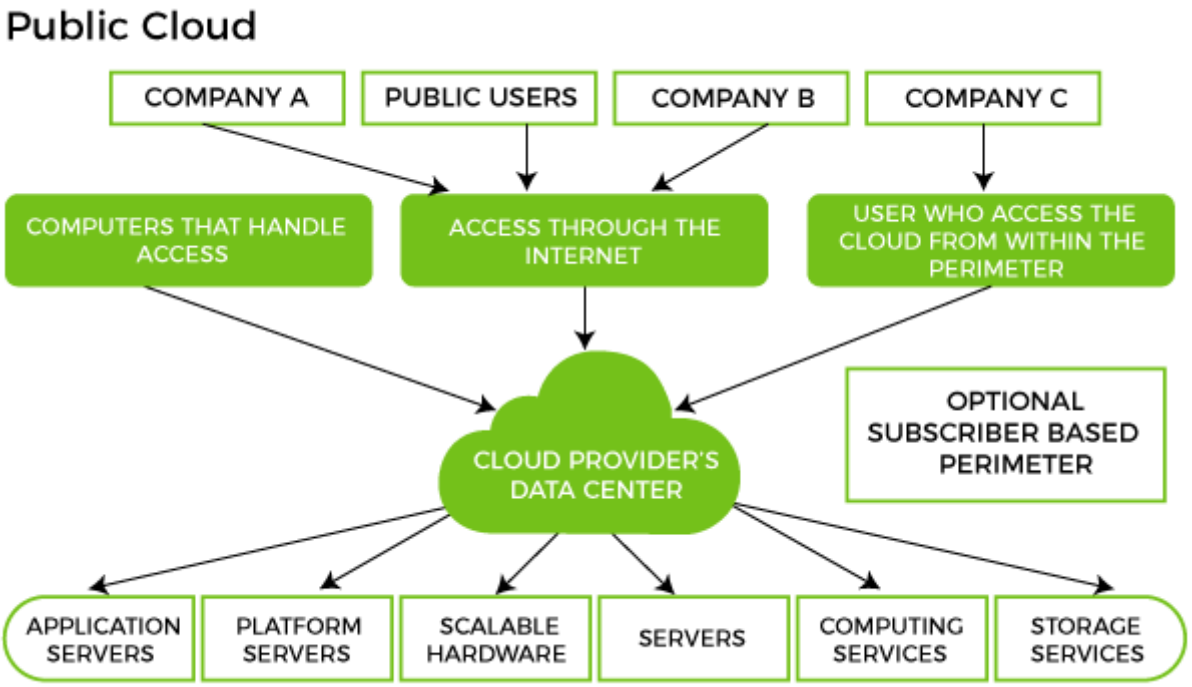
What Is A Cloud Deployment Model?

It functions as a virtual computing environment with a deployment methodology that varies based on the amount of data you want to store and who has access to

the infrastructure.



- Public Cloud: The cloud infrastructure is held by a company that sells cloud services and is made available to the general public or a major industry group.
- Low Investment – Because it is a pay-per-use service, there is no substantial upfront expenditure, making it excellent for organizations that want immediate access to resources.
- No Hardware Setup — The cloud service providers cover the complete infrastructure.
- No Infrastructure Management — Using the public cloud does not necessitate an in-house staff.
- Data Security and Privacy Concerns - Limitations of the Public Cloud Because it is open to anyone, it may not provide complete protection against cyber-attacks and may expose weaknesses.
- Issues with Reliability - Because the same server network is accessible to a wide variety of users, it might become unstable.,
- **Service/License Limitation** – While there are many resources that you can exchange with tenants, there is a cap on usage



Private cloud. The cloud infrastructure is dedicated to a single company. It can be administered by the company or a third party, and it can be on-site or off-site.

The Advantages of a Private Cloud

• Data Privacy – It is great for keeping company data to which only authorised staff have access. • Security – Resource segmentation within the same infrastructure can aid in improved access and security.

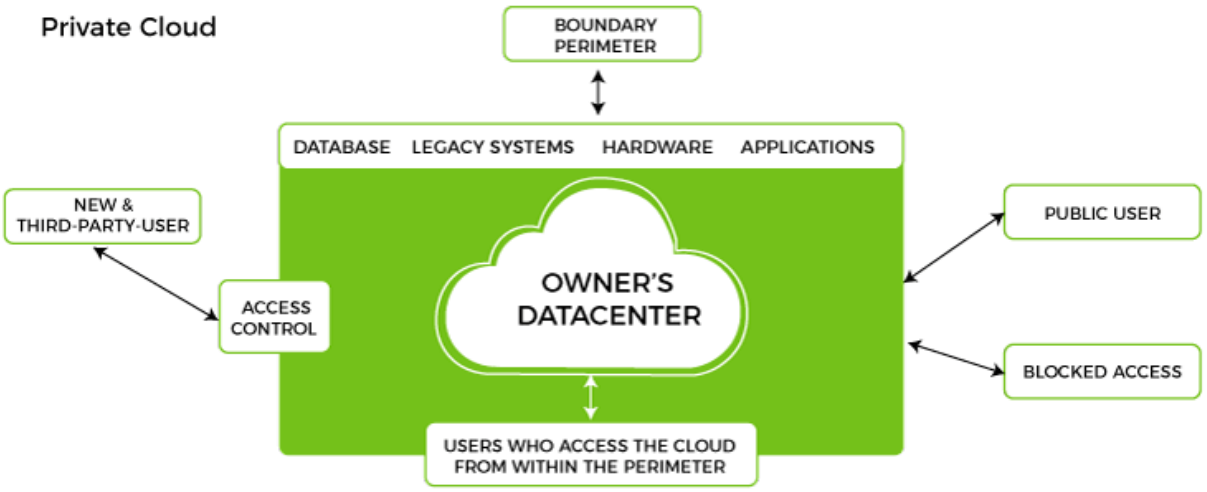
• Supports Older Systems – This approach caters to legacy systems that are unable to connect to the public cloud.

Private Cloud Limitations

• More Cost — Due to the benefits you would receive, your investment will be higher than the public cloud. You'll pay for software, hardware, and personnel and training resources here.

• Fixed Scalability - The hardware you select will assist you in scaling.

High Maintenance – Since it is managed in-house, the maintenance costs also increase



Community cloud. Several companies share the cloud infrastructure, which serves a specific community with common issues (e.g., mission, security requirements, policy, and compliance considerations). It can be handled by the organisations themselves or by a third party, and it can be on-site or off-site.

Community Cloud Advantages

• Lower Investment - A community cloud is substantially less expensive than private and public clouds while yet providing excellent performance.

• Setup Advantages – A community cloud's protocols and configuration must adhere to industry standards. Customers can work considerably more efficiently as a result of this.

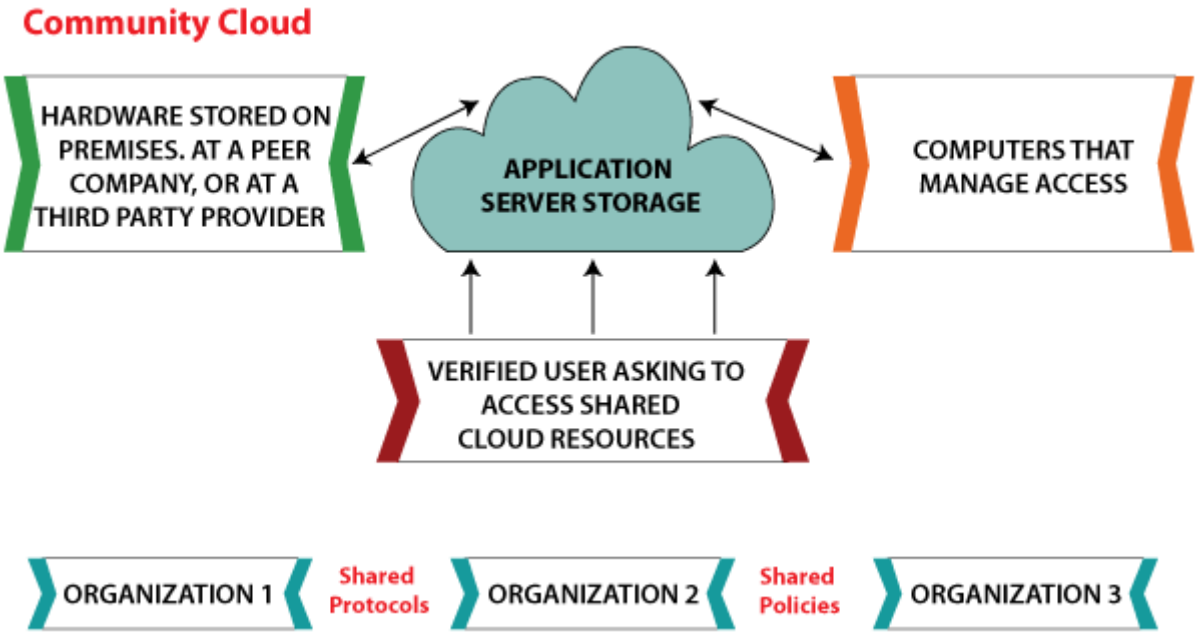
Community Cloud Limitations • Shared Resources - Community resources can provide issues due to limited bandwidth and storage capacity.

• Not as Popular - Because this is a new concept, it is not widely used or offered across sectors.

Limitations of Community Cloud

• Shared Resources - Community resources can provide issues due to limited bandwidth and storage capacity.

• Not as Popular - Because this is a new concept, it is not widely used or offered across sectors.



Hybrid cloud. The cloud infrastructure is made up of two or more clouds (private, communal, or public) that are separate yet linked by standardised or proprietary technologies to allow data and application mobility (e.g., cloud bursting for load-balancing between clouds).

Benefits of Hybrid Cloud

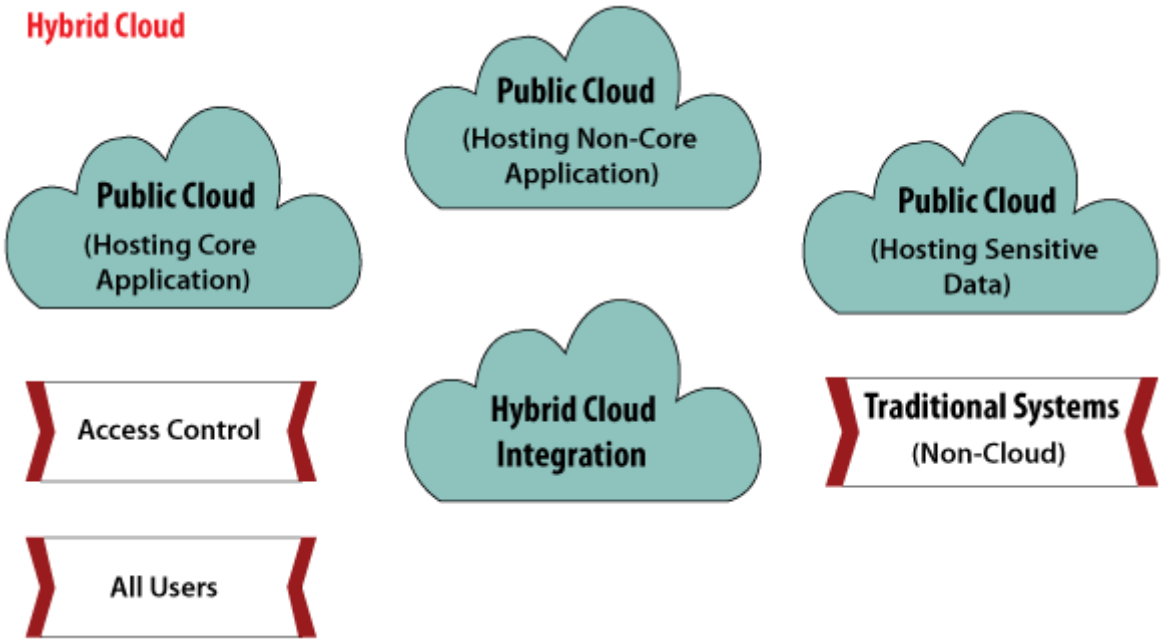
• Cost-Effectiveness – Because a hybrid solution primarily uses the public cloud to store data, the overall cost of the solution is lower.

• Security – Because data is appropriately separated, the risks of data theft from attackers are considerably decreased.

Limitations of Hybrid Cloud

• Complexity - Setting up a hybrid cloud is difficult since it requires the integration of two or more cloud architectures.

• Specific Use Case - This strategy is better for companies who have many use cases or need to isolate sensitive and essential data.



What Are the Various Approaches to Cloud Deployment?
What Are the Different Cloud Deployment Methodologies?

Cloud deployment has two techniques based on the management of responsibilities for installing various solutions. These are they:

• A third party deploys the cloud, which may be utilised in a communal, public, or private cloud model• In the private cloud model, the cloud is deployed by a single entity.

SaaS cloud deployment can be done in either a public or private cloud environment. The SaaS deployment, on the other hand, can be employed when a single company maintains a hybrid cloud architecture. There are virtual private clouds that work similarly to private clouds but in a public environment. Only trustworthy entities will be able to access the cloud. These virtual private clouds also use SaaS deployment.

3 Service Models Of Cloud Computing

Cloud computing enables the delivery of a variety of services that may be specified by

roles, service providers, and user firms. The following are the broad categories of cloud computing models and services:

IAAS: Changing Its Hardware Infrastructure on Demand

Infrastructure As A Service (IAAS) refers to the employment and use of a third-party provider's physical IT infrastructure (network, storage, and servers). Users can access IT resources through an internet connection since they are hosted on external servers.

The Advantages

• Cost and time savings: • Better flexibility: on-demand hardware resources that may be adjusted to your needs, • Remote access and resource management, • No in-house IT hardware installation and maintenance

For Who?

Large customers, corporations, or organisations capable of constructing and managing their own IT platforms would benefit from this cloud computing service model. They do, however, want the ability to change their infrastructure as their demands change.

PAAS: Providing a Flexible Environment for Your Software Applications

Platform as a Service (PAAS) provides for the outsourcing of both hardware and software infrastructure, including databases, integration layers, runtimes, and more.

The Advantages

• Development focus: mastering software programme installation and development

• Time and flexibility: no need to handle the platform's installation; quick production.

• Data security: You have complete control over the distribution, protection, and backup of your company's information.

For Who?

It's perfect for businesses who wish to keep control of their business apps. They do, however, want to be free of limitations in terms of managing the physical infrastructure and software environment.

SAAS: Releasing the User Experience of Management Constraints

Software as a Service (SaaS) is delivered via the internet with no installation required. These services may be accessed from anywhere in the globe for a low monthly charge.

The Advantages

• You are completely free of infrastructure administration and software environment alignment: no software installation or maintenance is required.

• It allows for simpler and faster testing of new software solutions since it uses automated upgrades to ensure that all users have the same software version.

For Who?

The SAAS model accounts for 60% of cloud solution sales. As a result, most businesses can use and prefer it.

CHAPTER-4 PERFORMANCE ANALYSIS

The data set includes Amazon reviews of nice cuisine spanning more than ten years. Ratings, product and user information, as well as blank text reviews, have all been updated. Reviews from all other Amazon categories are included.

The columns are as follows:

1. Product Id: Each product has its own unique identity.
2. User Id: each user has a unique identity.
3. User Profile Name: The user profile's name.
4. Knowing how many individuals have received the update is helpful.
5. Denominator of Helpfulness: The number of persons who said whether or not they found a review helpful.
Scores range from 1 to 5 on a scale of 1 to 5.
7. Stamp with the date and time
8. Synopsis: a synopsis of a synopsis of a synopsis of a synopsis of a synops
9. Revise the text.

E-pharmacies have shown a lot of promise in terms of growing drug sales, and the industry's growth will only benefit the digital health system and assist the government in achieving its goal of delivering effective and affordable health care.

The Drug and Cosmetics Act of 1940, the Drugs and Cosmetics Laws of 1945, and the Pharmacy Act of 1948 are now in place to regulate the growth and adoption of e-commerce.

In 2015, DCGI began the process of complying with current e-pharmacy rules and standards, recognising the need to build industry-specific regulations and send a positive message to all stakeholders.

The draught legislation was issued in 2018 and made public to request proposals after a few conversations with industry stakeholders.

With COVID-19 waves looming, it's critical to finalise and inform policy as soon as possible. This will assist to remove any doubt and facilitate local investment, giving the country's health-care infrastructure a boost.
According to the conclusion, the sector is still in its early stages of great growth and development.

Our drug-purchasing journey will undoubtedly become simpler when new donations and enhancements arrive. Pharmacies already exist, offering services such as doctor consultation and diagnostics, as the industry aims to become a one-stop shop for personal health care needs.

When India closed, the union and provincial governments did not take the effort to identify e-pharmacies as an important service, despite their importance. As part of the Arogya Sutu

plan, the government has made steps to establish pharmacies and related services through the Arogya Sutu Mitre website.

Consumers and pharmacists alike have benefited from these initiatives, with the industry as a whole seeing a 2.5X increase in homes using its services, with estimates reaching 8.8 million households by June 2020.

Pharmacies provide a variety of functions, many of which are linked to other aspects of the health care system, and the pharmacy's long-term future involves an internet platform. Web-based pharmacy communications available to both pharmacists and patients are instances of integrated e-healthcare systems.

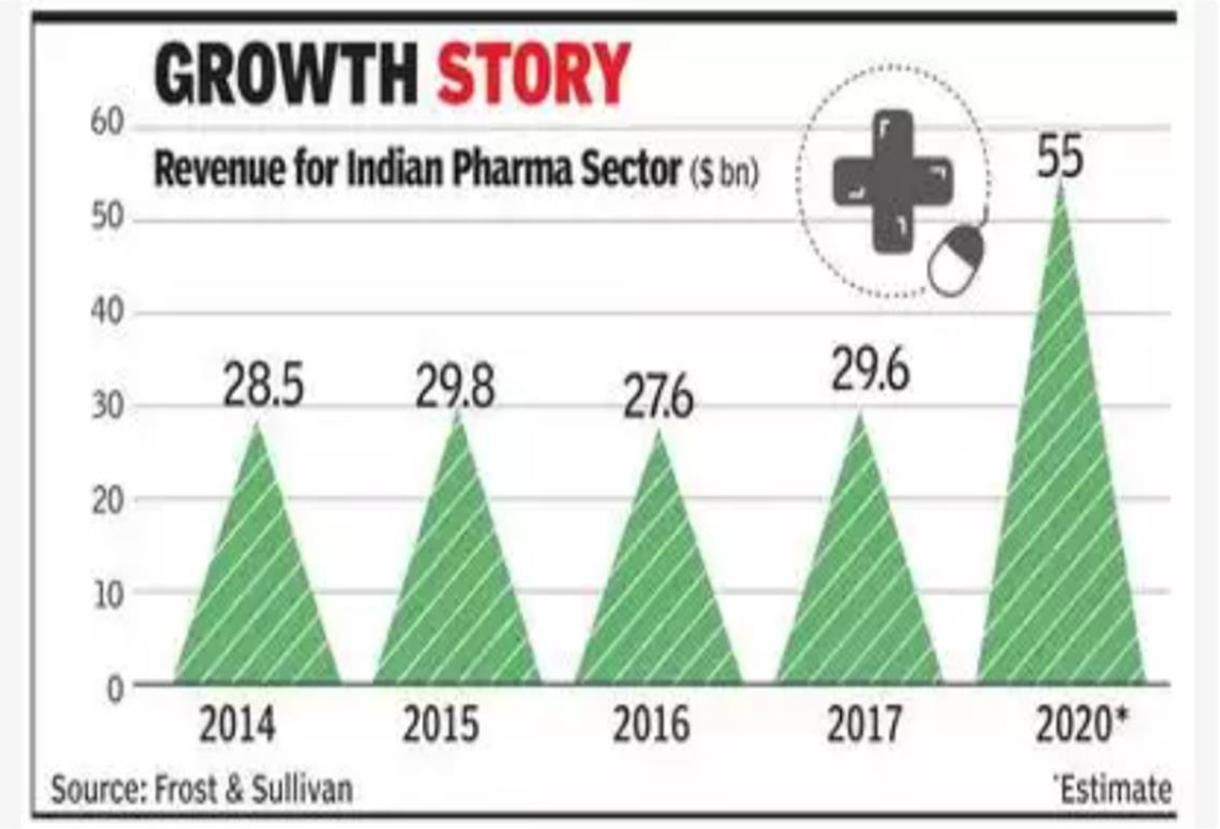
A call has gone out for the creation of secure 'patient sites' that offer communication, content, marketing, and social media - what the authors of the report refer to as the "four essential Cs" of the Internet37. This viewpoint was presented in the context of assisting independent adult life, with an emphasis on healthy living rather than sickness prevention.

Although internet pharmacies may not be the first choice in some instances, users of long-term pharmaceuticals and health care goods have compelling reasons to do so. Online pharmacists may want to think about how to provide online payment services in addition to product delivery.

Online pharmacies do not aggressively promote patient adherence assistance at the moment. Some instead give information on compliance equipment that may be found in-store. It would be nice to see programmes available at online pharmacies that provide online support for drug users, either by supporting a group of people taking specific medications (such as statins, which have a high risk of early discontinuation), or by providing reminders and live communication with a pharmacist team trained to negotiate and encourage adherence.

There is room for building an online pharmaceutical service that works with the mind, much as brick and mortar pharmacies have shifted their focus in recent years from drugs to resources. If patients are building a drug portfolio online, for example, what's to stop their pharmacist from having periodic online talks with in-house patients to examine medications?

Many pharmacies are increasing their internet presence, and some even have pages on social media sites like Facebook. Some of the UK and US pharmacy Facebook pages were viewed at the time of writing this evaluation; characteristics were connected with excellent health and a wide choice of health care items. The pharmacist's social media platform has already been proposed to play a role "in small and major projects that inform the public about health concerns, bring together partnerships to address public health challenges, and participates in research on new ideas for health solutions."



"People are terrified of being exposed while seeking treatment or lab results, therefore they prefer online options, which has created an insatiable need." Prashant Tandon, the company's founder and CEO, states, "The firm spends to meet demand."

Furthermore, more than 45 percent of new passengers are sustained without metros.
Even after the lockdown closure limits were exposed and real stores were made available, platforms saw a 30-40 percent increase in sales compared to pre-closing statistics.

E-pharmacy pharmacists reported a 25-65% increase in sales and a 5x increase in demand for COVID drugs like Tocilizumab and Favipiravir in a recent second wave. It's important to remember that pharmacists are key in battling the virus's second wave and striving to eliminate it.

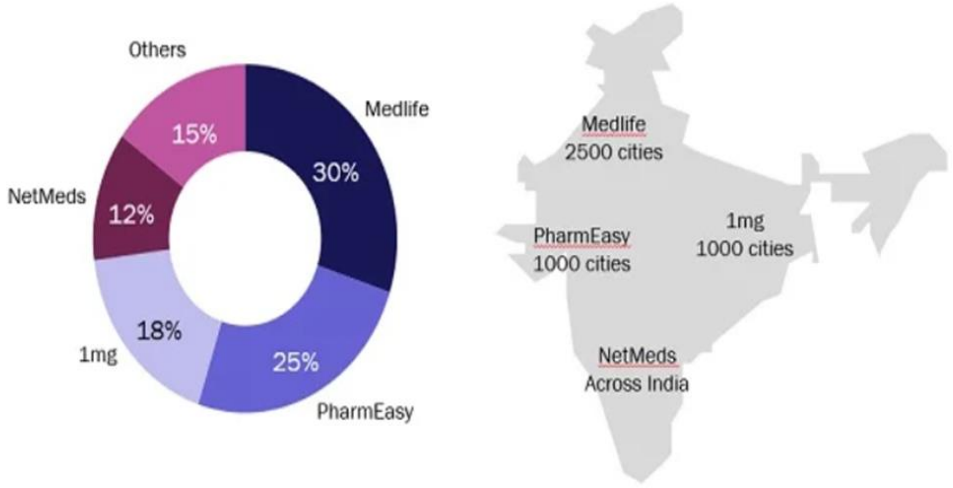
However, a comprehensive evaluation of the extent to which e-pharmacies have made the pharmaceutical sector more competitive is necessary. This essay investigates the impact of e-pharmacy pharmacies on three fronts: Offline drug traffickers, rival pharmacies, and customers

The nature of e-pharmacy pharmacy ownership, especially multiple pharmacy ownership by the same owner, raises the possibility of actual online store rivalry. Integrating diagnostic services with online pharmacies might generate antitrust issues, especially for offline pharmacies.

Customers are most concerned about the unpredictability of online discounts, as demonstrated by the hedonic price model.

When compared to offline drug sales and pharmaceutical formulations, digital pharmacies are still a small part of the market in many nations.

1 Pharmacy has acquired Midlife, transforming it into India's largest e-pharmacy and showcase platform (Ahmad 2021).



Furthermore, compared to pre-epidemic levels, the present worldwide pandemic has significantly increased consumer compliance and dependence on e-pharmacies. These and other e-commerce sites have become important providers of pain drugs and supplements, including vitamins.

The antitrust perspective in these e-pharmacies should currently be: what are the possible threats that these businesses might bring in the near future? Should competition regulators take any steps to ensure that future competition in this market is not skewed, even though e-pharmacy pharmacies are now a modest component, given clear evidence of growing demand?

We must first define a market before we can answer this question. Many countries' legal systems, like as India's, prohibit pharmacies from being sold outside of the country's borders. Each of these projects may pose challenges for the authorities in terms of trust and public health.

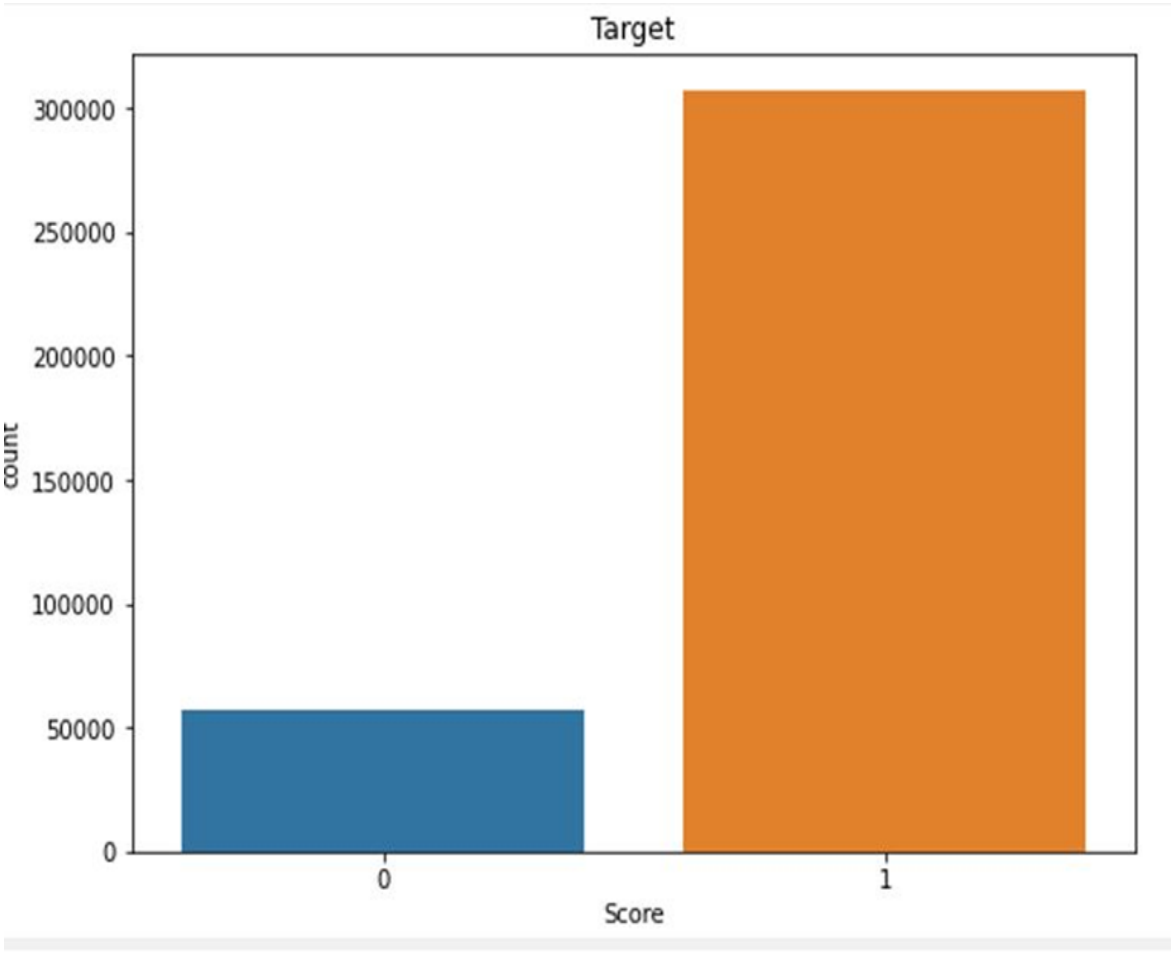
The phrase "e-pharmacy" often refers to "the business of distributing or selling, stocking, exhibiting, or supplying medications via a web portal or other electronic form" (Mayumi 2020). Although there is a legal structure in place in many nations to prohibit drug ads, there have been incidents of breaches of this norm during the current pandemic.
demand?
By definition, e-pharmacies may locate stock pharmaceuticals and over-the-counter medications.

The fact that a consumer does not have to expose himself to a pharmacist in order to do things online gives rise to the wrong motivations for making a living, particularly hidden

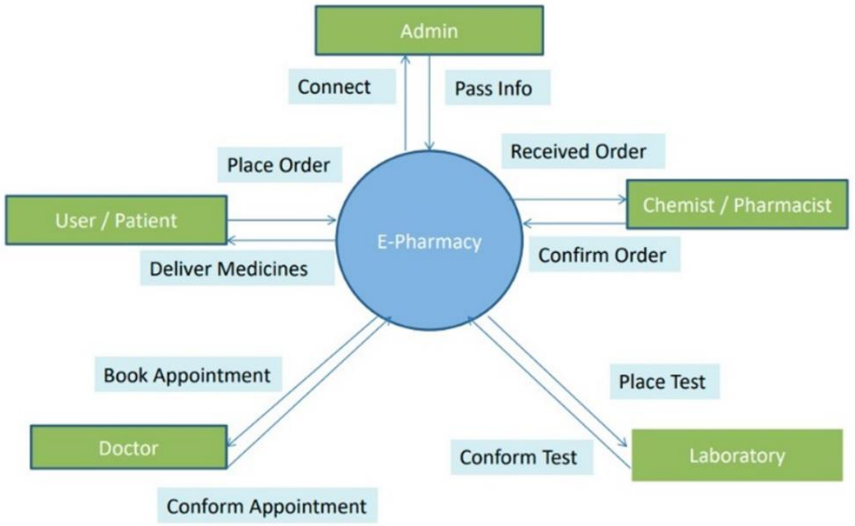
medical conditions that a consumer is embarrassed to disclose to any doctor or pharmacist while ignoring potential medication side effects (Glover-Thomas and Fanning 2010). Any kind of self-medication, including vitamins, carries hazards, and e-pharmacy pharmacies assist with this "cure" problem (Glover-Thomas and Fanning 2010).

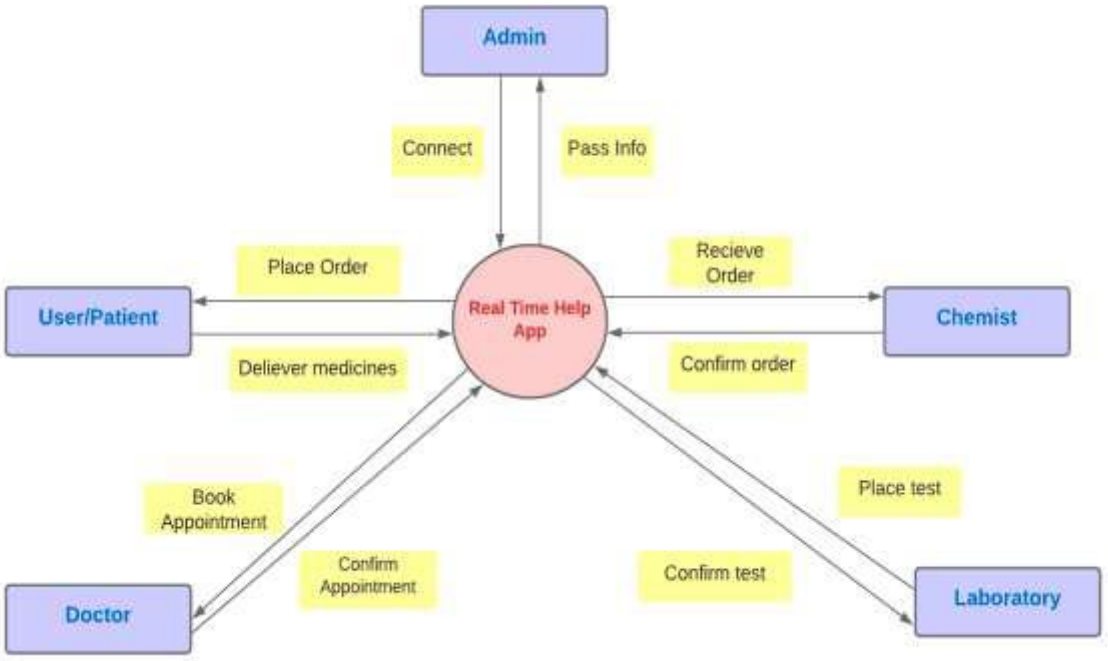
4.1 Analyses target variables

As discussed earlier we will assign all data points above the 3rd rating as a good class and less than 3 as the opposing class. we will ignore the remaining points.



4.2 Data Flow Diagram





The e-pharma system's major purpose is to supply all medical-related solutions through a single smart phone app. The app tries to accomplish this by meeting the following objectives:

• Create an app and a forum where physicians and patients may connect with direct laboratories and pharmacies for their needs.

• Patients will be able to obtain advice, make an appointment with a doctor, gather samples for diagnosis, and contact their local pharmacy with drug-related inquiries.

• Doctors will be able to log in with their personal information, and users will be able to find out by looking up the local PIN.

• Create an app that is simple to use, instructive, and beneficial, especially for adults.

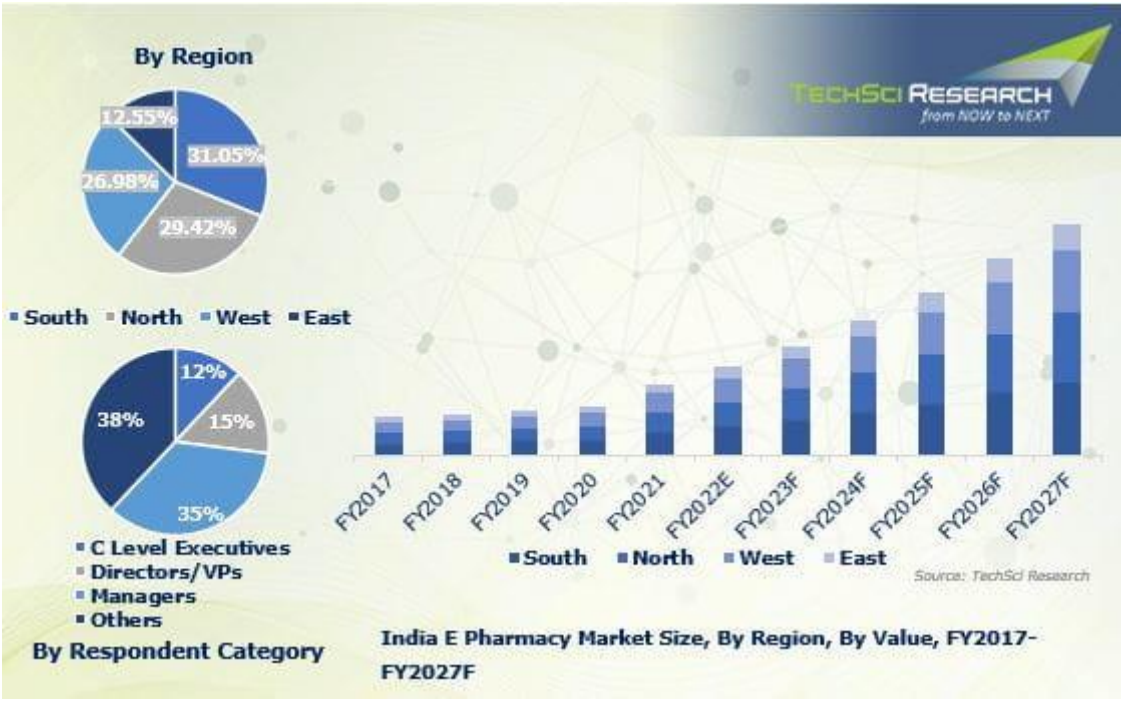
• Set up distinct access points for patients and doctors.

• Providing a platform for live conversation.

• Assisting patients, particularly in times of emergency or epidemic.

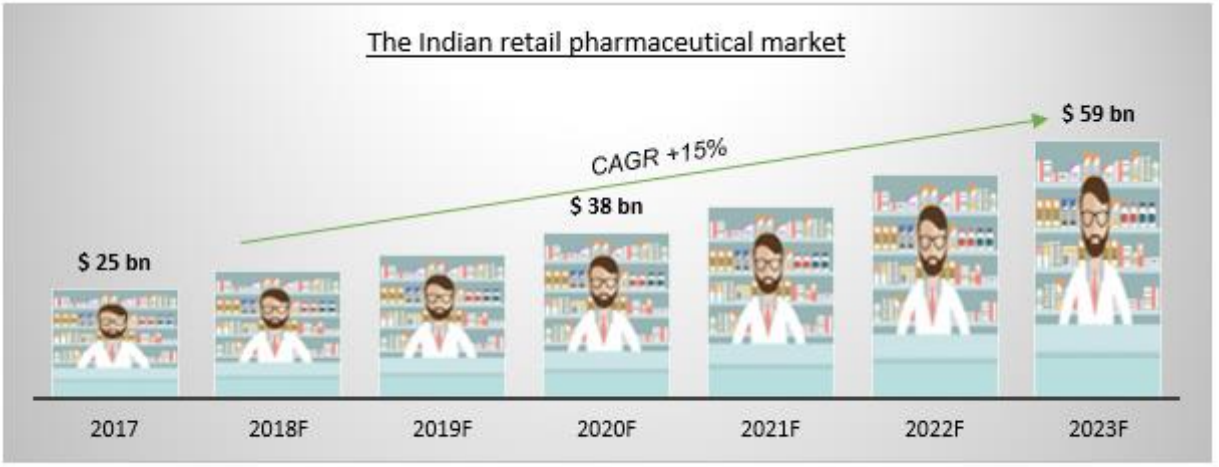
The Indian pharmaceutical market is divided into three categories: generic pharmaceuticals, illicit drugs, and patented goods. Ordinary medication accounts for around 76 percent of income in the Indian pharmaceutical business, while illegal drugs and patented pharmaceuticals account for 31 percent and 7 percent, respectively.

In this case, the market for infection is nearly 13.29 percent, followed by 15.69 percent for cardiovascular drugs, 13.86 percent for stomach drugs, 8.78 percent for vitamins, minerals, and nutrients, and 9.34 percent for anti-diabetes drugs.



In FY2021, the India E pharmacy market was valued at USD344.78 million, with a robust growth rate of roughly 21.28 percent predicted during the forecast period. This can be due to the country's increasing internet penetration. The number of internet users in India increased by roughly 47 million to 624 million in January 2021. In January 2021, the internet penetration rate was approximately 45 percent. Additionally, the government of India's digital India programmed is predicted to propel market development until FY2027F.

Source: Invest India, IBEF



Source: IBEF and EY

E-pharmacy state: India vs other global markets

	US	Europe	China	India
Internet penetration	84%	87%	54.3%	34.4%
Retail share in distribution channel	~85%	~95%	~25%	~85%
Dominance	Offline pharmacies	Offline pharmacies	Hospitals	Offline pharmacies
Top three retail pharmacies share	~82%	Fragmented market with over 130,000 independent pharmacies	~5.4%	Fragmented market with over 850,000 independent pharmacies
Top three distributors share	~90%	N/A	~34.6%	Fragmented market
Retail chain presence in market	High	Low	Low	Low
Regulatory complexity and strictness	High	Medium	Medium	Low

Sources: Statista, World Bank, EY, Frost & Sullivan, Deutsche Bank Market Research and Televisory's Research

Chapter-5 CONCLUSION

As the internet becomes more widespread, new options for swiftly receiving expert advice and information from health professionals are opening up.

Online pharmacies are quite useful in this situation. Patients who need support with their symptoms or discuss the potential adverse effects of medication can obtain it quickly and effectively.

Online doctors and pharmacists may provide professional guidance, troubleshooting, diagnosis, and support for new and recurring drugs.

Patients with chronic diseases can also benefit from the online medical service, as those who require additional medication can receive advise on dose and treatment length requirements.

Here are five reasons why someone should trust us:

1. On-time delivery and an easy ordering procedure
Our website provides quick delivery and a straightforward purchase process, allowing you to skip the long lines.

2. Treatment in a flash with only one click
We want to make the best use of technology to promote people' health and well-being. Our medical specialists ask a series of questions to analyst the situation and then authorize the suitable patient's prescription. Additionally, a pharmacist may be reached immediately via phone, email, or chat.

3. Expert assistance and advice
We give you immediate access to specialists, specialty doctors, and pharmacists.

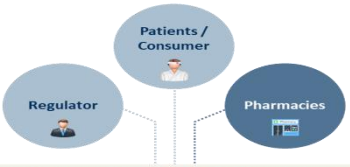
4. It's quite simple.
Our website provides the most competitive pricing for high-quality medications.

5. Services with intelligence.

Some people prefer to purchase their treatment online, or just wish to speak with an expert regarding instructions and health over the phone rather than in person.

x

Benefits of the e-Pharmacy Model



Benefits of the e-Pharmacy Model to PHARMACIES

1 Additional Business Opportunity for Brick-and-Mortar Pharmacies

An e-Pharmacy model will enable existing pharmacies to enlist their products on the e-portal and serve a broader set of customers, or a network of pharmacies integrating to one platform and accessing a broader customer base across geographic locations.

2 Inventory Consolidation

The e-Pharmacy model ensures consolidation of inventory. This would reduce working capital requirements, remove wastage from the system, and increase margins, thus making the e-Pharmacy a sustainable value-added service model.

3 Enhanced Services of the Pharmacists

The e-Pharmacy model enhances the services of the pharmacists to consumers. Routine questions about medications could be answered by online pharmacists using e-mail or other real-time chat options. Knowledge of a patient's diagnosis, list of drugs the patient is already taking, and established drug monitoring parameters, largely unavailable to pharmacists at present, could be made accessible through this model.

2.3 Challenges for Retail Pharmacy

Low Industry Margins

Retail pharmacy is a highly fragmented and competitive industry with ~8,00,000 registered retail outlets across the country. Drugs are bought in smaller quantities by these retail stores from drug distributors at high prices which in turn reduces their profit margins.

Sustainability of the Industry

Due to increased competition and rising pressure on price controls, the sustainability of the retail pharmacy industry is at risk due to the already lower profit margins. Technology adoption can help this industry to increase productivity and provide value-added services to consumers.

Drug Abuse

Allegations of medicine sales without prescriptions are levied at retail pharmacies. This has led to significant number of cases of drug abuse.

Counterfeit Medicines

Retail pharmacies in India are alleged to sell sub-standard and fake medicines, thereby increasing the risk of adverse effects.

Documentation/Tracking

Sale of drugs also happens without providing bill / invoice for the purchase, affecting the amount of tax collected. Poor documentation of prescription drug sales is therefore impacting the drug recall process.

Poor Inventory Management

In India, it is generally not feasible for a single pharmacy to store a wide range of products, which forces consumers to visit multiple pharmacies for procuring all their medicines.

Currently, the retail pharmacy ecosystem has high friction, leading to inefficiencies and high cost to the consumers. Thus, there is a need for a technological upgrade of the model for streamlining the processes. Computerization of pharmacies, recording of transactions, and restricting cash transactions could transform the industry.

Retail Pharmacy vs. e-Pharmacy Chains

The e-Pharmacy concept has a number of advantages over the traditional pharmacy paradigm. Higher profit margins, greater counterfeit / counterfeit medication detection, and better control check conformance are all advantages. A full comparison of retail pharmacies and e-Pharmacy chains may be seen in the table below.

Model	Retail Pharmacy Stores	e-Pharmacy Chains
Profit Margins	• Single retail pharmacies have relatively low profit margins. • Drugs are purchased in small volumes from distributors at high prices, which reduces the profit margin.	• e-Pharmacies purchase in bulk directly from companies/ distributors, which enables them to get the drugs at a substantial discount there by increasing their profit margin.
Counterfeit / Poor Quality Drugs	• Sub-standard and fake medicines could get sold through this channel, increasing the risk of adverse effects.	• e-Pharmacy chains could prevent sale of poor quality drugs through their efficient tracking mechanism
Inventory Management	• It is less feasible for a single pharmacy to store a wide range of products, which forces consumers to visit multiple pharmacies for procuring all the medicines.	• Apart from storing a wide range of products, the software helps e-Pharmacies to analyse the consumption pattern of customers, enabling them to predict future requirements, thereby leading to efficient inventory management.
Documentation/ Tracking and Level of Technology	• Retail pharmacies generally lack have the resources to invest in advanced information technology software for documentation and tracking	• e-Pharmacies have the resource to invest in the latest information technology software. Digitalization of pharmacies enables them to record and track transactions and increase productivity.
Challenges	• Retail pharmacies are facing the challenges of high rental rates and rising overhead costs combined with the growing threat from online pharmacies.	• Consumer loyalty towards retail pharmacy and the growing threat from the rising number of online pharmacies are the key challenges.

Citizens, health professionals, and decision makers are considering mobile applications as a helpful tool in dealing with the pandemic's key concerns. The pandemic has benefited from the inclusion of digital technologies into pandemic policy. Countries that have swiftly adopted digital tools to enable planning, surveillance, testing, contact tracing, quarantine, and clinical care have remained front-runners in managing disease burden in the fight to contain the spread of a highly transmissible virus. As the internet becomes more widespread, enormous new opportunities for instant access to expert advice and information from health experts emerge. Online pharmacies are quite useful in this situation.

Patients who need support with their symptoms or discuss the potential negative effects of therapies can get it quickly and discreetly. The online doctor and pharmacist may provide expert advice, aid with new and repeat medications, and diagnose issues. Patients with long-term diseases can also benefit from an online pharmaceutical service, as those who require various prescriptions can receive guidance on dose and time. Here's a rundown of five reasons why you can rely on us:

• Quick shipping and a straightforward ordering process: Our website offers fast delivery and a straightforward purchase process, allowing you to avoid the inconvenience of a long wait.

• One-click treatment: We want to make the best use of technology in order to promote the health and well-being of our patients. Our medical specialists ask a series of questions to assess the situation and then authorize a prescription for the patient. Furthermore, instant access to a pharmacist by phone, email, or chat is available.

• Professional advice and guidance: We provide immediate access to specialist services, physicians, and pharmacy experts.

• Extremely practical: Our website has some of the cheapest deals on drugs, as well as excellent customer service. We provide a large selection of both branded and non-branded items.

• Discreet services: Some individuals prefer to buy their therapy online, or merely want to talk to someone about it.

The operation of e-pharmacy websites and the sale of internet pharmaceuticals in India is not prohibited, according to the debate above. It is clearly covered under the Drugs and Cosmetics Act and the Drugs and Cosmetics Rules. The only worry for internet pharmacies is compliance with applicable laws. The subcommittee's draught report makes it plain that opioids, tranquillizers, and Schedule X medications that are prone to misuse should be kept out of the reach of e-pharmacy dealers. Customers may get their medications quickly and safely through e-pharmacy. This has the problem of allowing clients to experiment with self-medication, which might be harmful to their health. The most pressing requirement is to see if the subcommittee's recommendations are included into the legislation through amendment, putting an end to the conflict between traditional and internet pharmacies.

FUTURE SCOPE:

Information and Time Management - Information and time management is one of the most common uses of mobile devices by HCPs.

and Notability, enable users to write or dictate notes, record audio, store photographs, and organize material into categories within a searchable electronic database.

Health Record Access and Maintenance — Apps that help with data collection and retrieval, such as inputting information into a patient's EHR or EMR, are also available. HCP administration of EHRs and PACSs is common in hospital information systems, allowing secure access to patient information (medical history, vitals, medications, lab results, x-rays, scans, consultations, and discharge notes) on site or remotely.

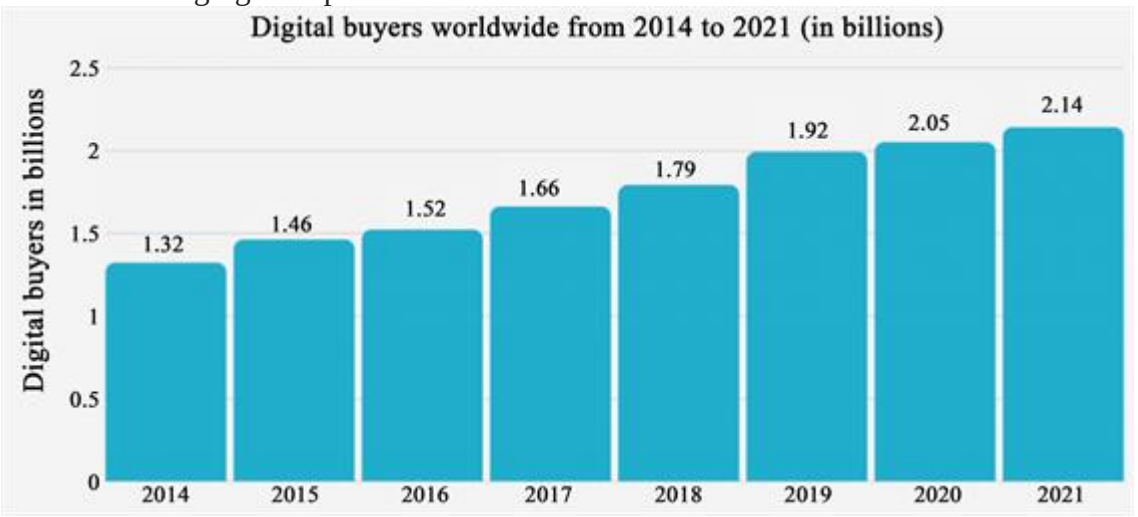
Communication and Consulting -Mobile devices have been shown to increase communication and consultation between HCPs and their colleagues. Mobile phones were shown to increase communication between doctors and nurses on inpatient wards in one research. More than 80% of medical school HCPs and students said they used mobile devices to interact with colleagues regarding patient care via e-mail, phone, and text messaging in a poll. Texting, they said, is a more efficient mode of communication than phone calls or in-person meetings. Mobile devices also allow users to respond quickly to e-mails, helping them to stay on top of communication.
Mobile devices also allow users to respond quickly to e-mails, helping them to stay on top of communication. In emergency situations, texting or phoning colleagues directly on their mobile devices, rather than paging them, has been found to save time. HCPs may also employ mobile devices to help long-distance patients by allowing them to communicate or share photographs about difficulties or queries.

Reference and Information Gathering – HCPs can utilize mobile devices to search for and access medical literature, as well as other information sources. Mobile devices were often used to view medical journal websites (60 percent) or medical news online, according to a study of medical school HCPs and students (74 percent). Several medical publications, including the New England Journal of Medicine, The Lancet, and the BMJ (previously the British Medical Journal), provide applications that allow you to read articles on your phone or tablet. Journals, on the other hand, seldom allow free access to articles without a membership.

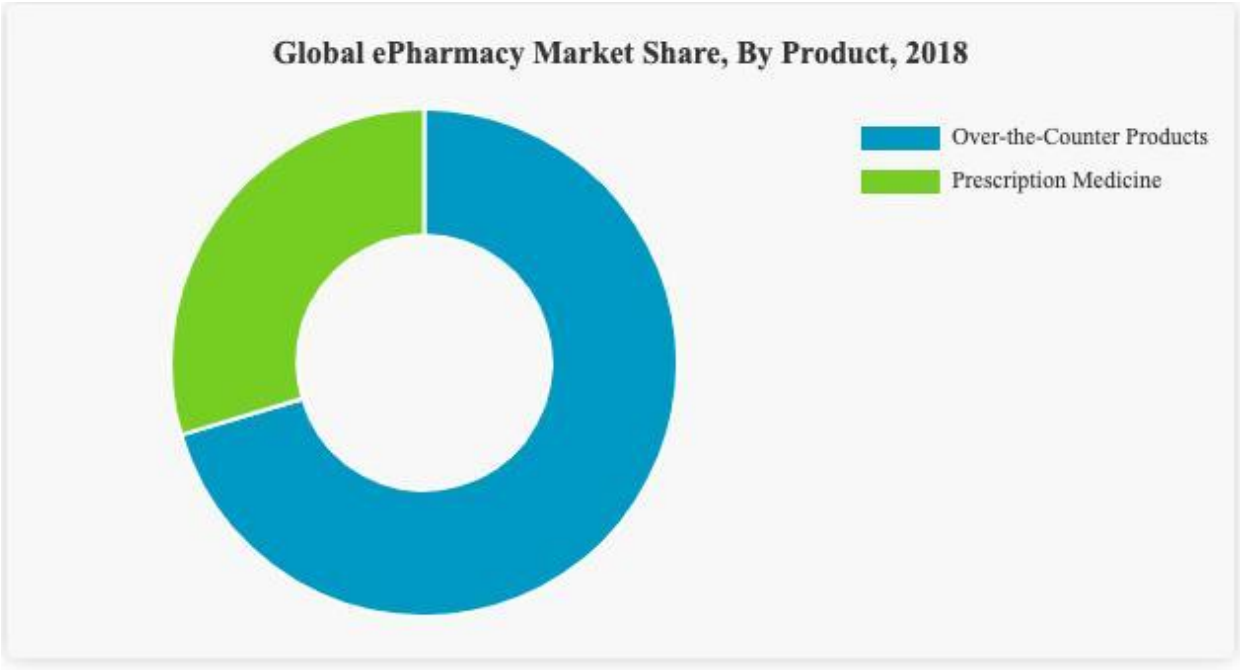
Patient Management - Mobile devices have already shown to be a useful choice for remotely monitoring the health or whereabouts of people with chronic diseases or disorders. Apps for mobile devices can help with public health surveillance, community data gathering, and assisting handicapped people in living independently. A single-lead electrocardiograph (ECG) was connected to a smart phone in one research to diagnose and track the treatment of sleep apnea patients, offering a potential alternative to costly and time-consuming polysomnography. Sensors linked to clothing that interact with mobile devices have also been used to monitor and gather medical data on chronically unwell elderly individuals remotely.

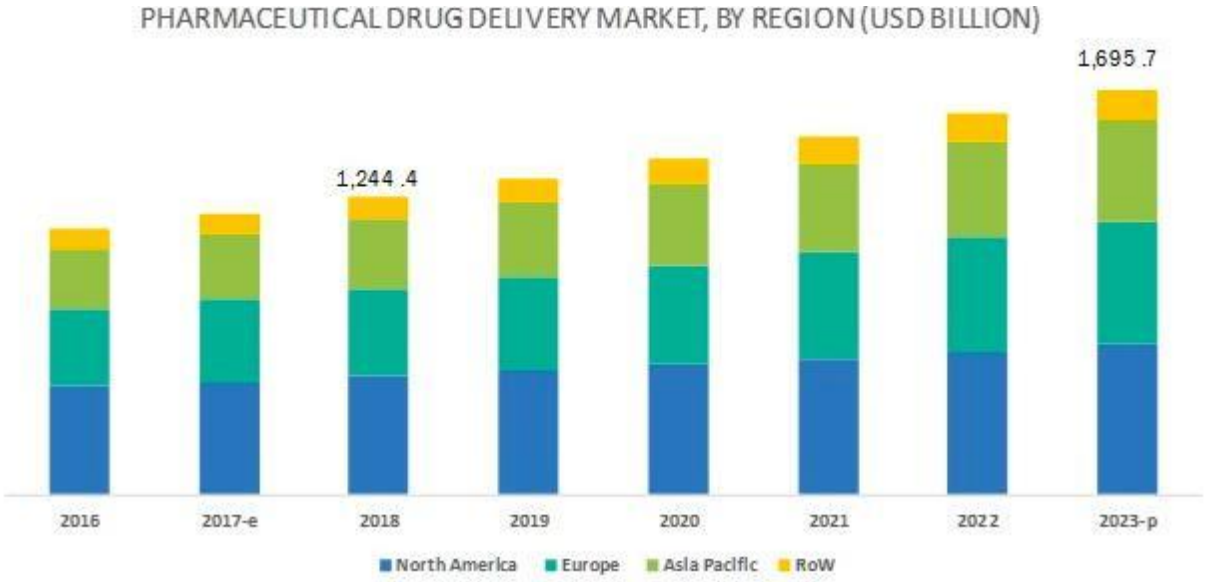
When we have enough essential employees to operate the firm, we will pilot it in Dhaka for a week. Then we'll spread out across the country. That may need the involvement of investors. However, we shall start with money from our own pockets. The money generated from the sale of the items will ensure the system's long-term viability. Because of the high demand for the COVID-19, it is expected that this system will last on the market. We'll look for sponsors to help us communicate our business strategy with investors, who could see value in it and decide to invest. Then, in order to attract additional customers, we will advertise our service.

Consumer demand patterns are shifting predominantly towards purchasing basics, as a result of COVID-19's unparalleled alteration of consumer lifestyles. While COVID-19 supply chain and procurement strategies are still emerging, the long-term impact on firms has yet to be determined. They aim to make it easier for customers to get their items faster. They prefer that their consumers have items delivered to their selected location rather than having to visit their store. It's only for the purpose of providing them with a fantastic online purchasing experience. The fast expansion of e-commerce has had a detrimental impact on physical stores. E-commerce is now seen as a danger by the majority of them...The supplied figure is sufficient to demonstrate how the e-commerce market is fast expanding. So, if we're talking about e-pharmacy, now is the time to learn about e-commerce. Many vendors will be able to display and sell their drugs online as a result of the migration to the digital platform. By 2023, the worldwide e-pharmacy industry is expected to be worth over $128 billion. It's the perfect time to go into the e-commerce market and join the ranks of the world-changing entrepreneurs.



The following image displays the **global e-pharmacy market** share,




PHARMACEUTICAL DRUG DELIVERY MARKET, BY REGION (USD BILLION)
1,695 .7
1,244 .4
2016
2017-e
2018
2019
2020
2021
2022
2023-p
North America
Europe
Asia Pacific
RoW

References

[1] Website of OpenCV - www.opencv.org
[2] Microsoft Developer Network (MSDN) - www.msdn.microsoft.com
[3]. [4] http://www.worldometers.info/coronavirus https://www.coronatracker.com/
[5]. https://www.mygov.in/covid-19
[6]. https://economictimes.indiatimes.com/smallbiz/startups/how-online-pharmacies-arenow-rushing-to-pace-upgrowth/articleshow/60520292.cms
[7]
https://www.researchandmarkets.com/reports/5137332/india-e-pharmacy-marketopportunity-outlook-2025
[8]. H.Ovaskainen (2001). Advantages and hazards of online pharmacy 15th World Health Organization Drug Information (3 & 4)
[9]. V.P. Priyanka and B.K. Ashok (2016). Regulation of pharmacies in India: Adding New Dimensions to Pharmaceutical Regulatory Affairs Regulatory Affairs for Pharmaceuticals2016,5 (2). https://www.omicsonline.org/retrieved
[10]. https://www.pharmatutor.org/articles/2019-review-of-the-current-status-of-e-pharmacy-in-India
IJMSEM, 2017; 2(4):1-17. Mohd A, Mustfa M, "Consumer buying behaviour of retail pharmacy business with specific references to Delhi and NCR."
[12]. "A study of the benefits and drawbacks of internet pharmacy," by VH Jain, SA Tadvi, and SP Pawar. JAPR, 5(1), 20-26, 2017.
[13]. "Cybermedicine: the Benefits and Risks of Buying Drugs Online," by David M. 27(1):57-65 in JTLP, 2000; 5 (2):1.

[14] Kranti N, Vishnu P, Kumu V, Sharma Jvc, "E-pharmacy Regulations in India." WJPR, 8:421-430, 2019.

NK Jain [15]. A forensic pharmacy textbook. 7th edition Vallabh Prakash an, Delhi, 2007, 184: 49-54.

[16] Priyanka VP, "E-pharmacies Regulation in India: Adding New Dimensions to the Pharmaceutical Industry" 5(2): 15-21 in Pharmaceutical Regulatory Affairs, 2016.

"Internet pharmacy: concerns of access, quality, pricing, and regulation," Crawford SY. J MED SYST, 27(1), 57-65, 2003.

"Should E-Pharmacy Be Made Illegal in India?" [18]. Singh R. JMC, 5(1), 18-22, 2019.

"Online Pharmacies." Anatine M, Shukla A. The legal battle between Indian internet pharmacies and medicine retailers" 2015, EHLP.

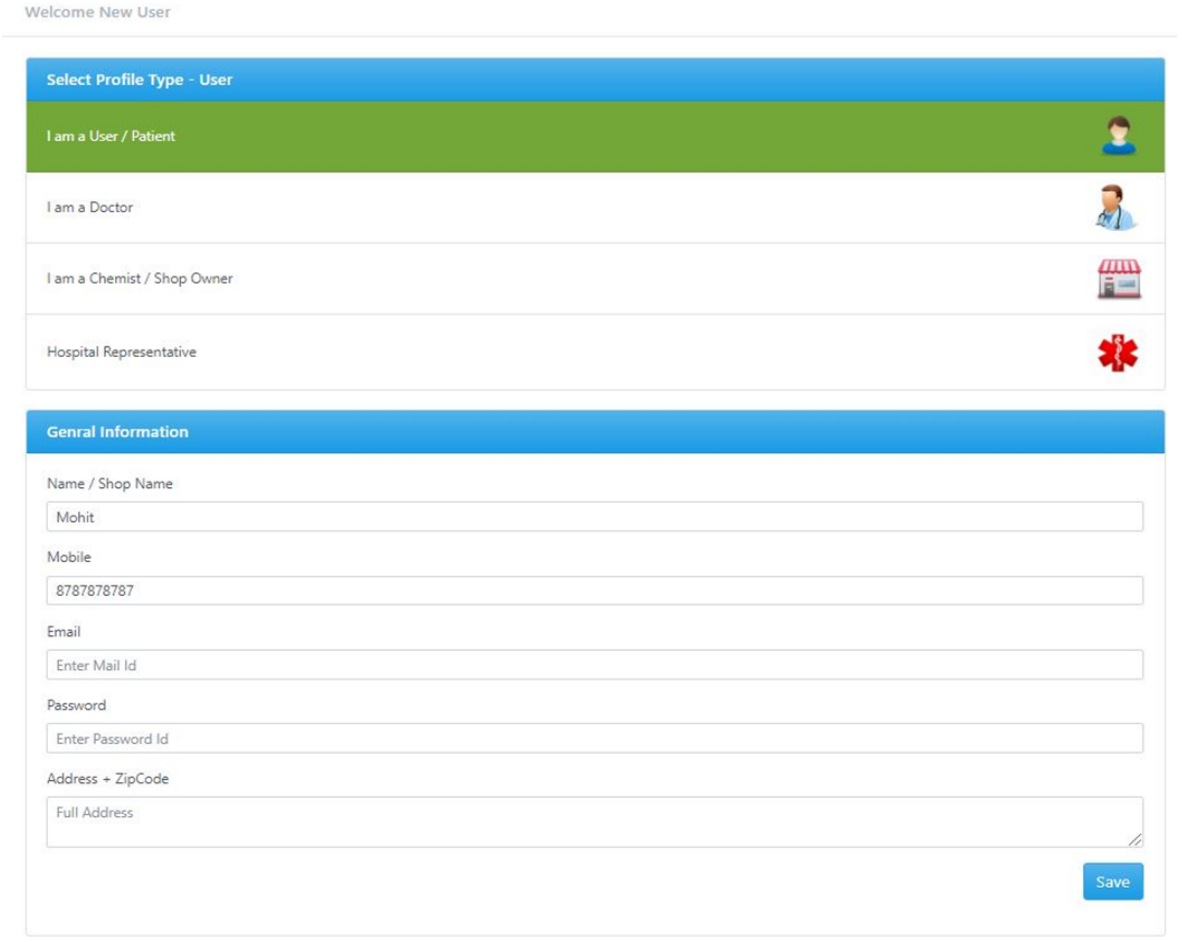
"A Review on Online Pharmacy: Views and Counterviews," Thalkari AB, Karwa PN, Gwali CS. AJPT, 8 (2), 108-111, 2018.

APPENDICES:

SOURCE CODE

Web Pages Fron-end with their source code

- Sign-Up Page



Source code of Sign-Up Page

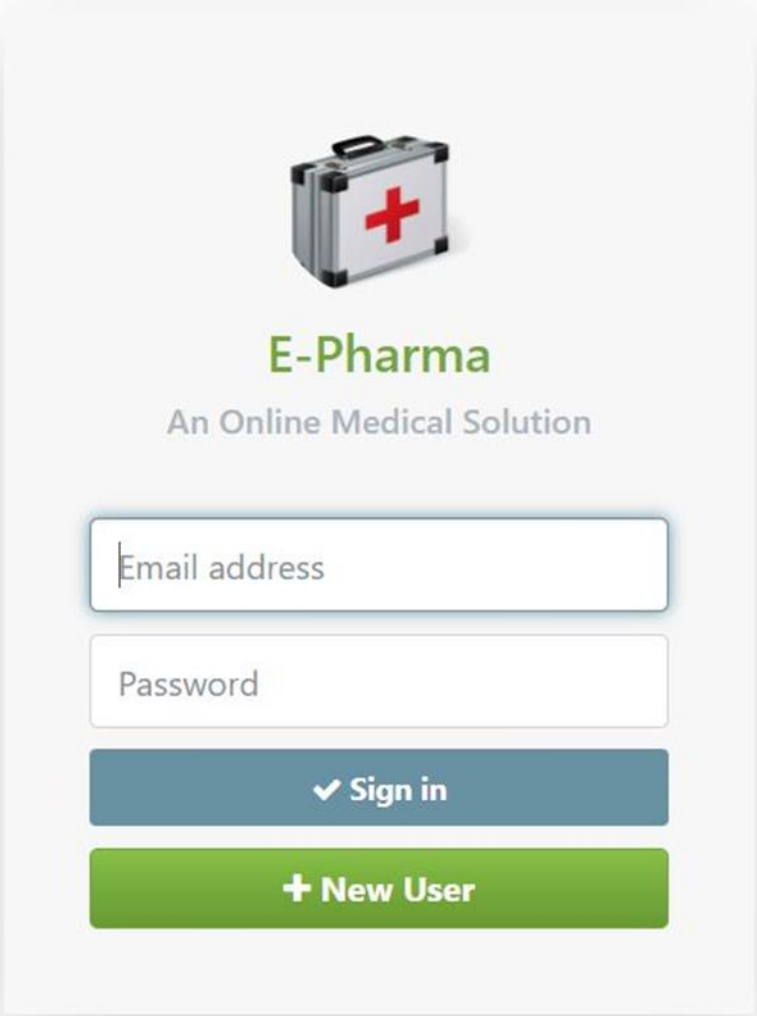
```
<html>

<head>
   <meta charset="utf-8">
   <meta name="viewport" content="width=device-width, initial-scale=1.0, shrink-to-fit=no">
   <title>E-pharma-App</title>
   <link rel="stylesheet" href="assets/bootstrap/css/bootstrap.min.css">
   <link rel="stylesheet" href="assets/fonts/font-awesome.min.css">
   <link rel="stylesheet" href="assets/css/Google-Style-Login.css">
   <link rel="stylesheet" href="assets/css/styles.css"><script src="assets/alertifyjs/alertify.min.js "></script>
   <link rel="stylesheet" href="assets/alertifyjs/css/alertify.min.css" />
   <link rel="stylesheet" href="assets/alertifyjs/css/themes/default.min.css" />

   <script src="assets/js/angular.min.js"></script>
   <script src="assets/js/angular-sanitize.min.js"></script>
  <script>
      var app = angular.module('myApp', []);
      app.controller('customersCtrl', function ($scope, $http, $location) {

         $scope.ProfileType = 'User';
         $scope.User = { UID: 0, UserName: 'Mohit', Mobile: '8787878787', ProfileType: 'User' };


         $scope.SignUp = function () {
           // alert("assets/api/SignUpApi.php?Name=" + $scope.Name + "&Mobile=" + $scope.Mobile + "&Email=" + $scope.Email + "&Address=" + $scope.Address +
```

```
"&Services=" + $scope.Services + "&RegCode=" + $scope.RegCode + "&PWD=" + $scope.PWD);

            var Valid = true;
            if ($scope.User.ProfileType == "Not Selected") { alertify.error("Profile Not Selected"); Valid = false; }
            if ($scope.User.UserName == null) { alertify.error("Name Can not be Blank"); Valid = false; }
            if ($scope.User.Mobile == null || $scope.User.Mobile.length != 10) { alertify.error("Invalid mobile Number"); Valid = false; }
            if ($scope.User.Email == null) { alertify.error("Invalid Email ID"); Valid = false; }

            if ($scope.User.Address == null) { alertify.error("Address Can not be Blank"); Valid = false; }
            if ($scope.User.RegCode == null && $scope.User.ProfileType != 'User') { alertify.error("RegCode Can not be Blank"); Valid = false; }
            if ($scope.User.Services == null && $scope.User.ProfileType != 'User') { alertify.error("Services Can not be Blank"); Valid = false; }
            if ($scope.User.PWD == null) { alertify.error("Password Can not be Blank"); Valid = false; }

            var data = angular.toJson($scope.User);



            if (!Valid) return;

            $http.post("assets/api/SignUpApi.php",data)
               .then(function (response) {

                  if (response.data.Status == 'Success')  location.assign('index.html');
                  else {

                     alertify.error(response.data.Message);

                  }

               });


        }
        $scope.SelectProfile = function (ProfileType) { $scope.User.ProfileType = ProfileType; }
    });

    function Load() {
       $('#Body').attr('hidden', false);
       $('#Body').fadeIn('fast', 'swing', function () { });
    }
```

```
    function Transition(Page) {

        location.assign(Page);

    }

  </script>
</head>

<body ng-app="myApp" onload="Load()" ng-controller="customersCtrl" id="Body" style="font-size: 14px;">
  <div ng-include src="'menu.php'"></div>
  <div class="container" style="margin-top: 20px;">
    <h6 class="text-secondary">Welcome New User</h6>
  </div>
  <hr>
  <div class="container" style="margin-top: 20px;">
    <div class="card">
      <div class="card-header bg-primary">
        <h6 class="mb-0">Select Profile Type - {{ProfileType}}</h6>
      </div>
      <ul class="list-group list-group-flush" style="margin: 0;">
        <li class="list-group-item d-flex" style="cursor:pointer" ng-class="(User.ProfileType=='User')?'bg-success text-white':''" ng-click="SelectProfile('User')"><span class="d-flex flex-fill align-items-center">I am a User / Patient</span><img src="assets/img/male_user.png" style="width: 48px;"></li>
        <li class="list-group-item d-flex" style="cursor:pointer" ng-class="(User.ProfileType=='Doctor')?'bg-success text-white':''" ng-click="SelectProfile('Doctor')"><span class="d-flex flex-fill align-items-center">I am a Doctor</span><img src="assets/img/People%20Doctor%20Male64.png" style="width: 48px;"></li>
        <li class="list-group-item d-flex" style="cursor:pointer" ng-class="(User.ProfileType=='MedicalShop')?'bg-success text-white':''" ng-click="SelectProfile('MedicalShop')"><span class="d-flex flex-fill align-items-center">I am a Chemist / Shop Owner</span><img src="assets/img/Shop.png"></li>
        <li class="list-group-item d-flex" style="cursor:pointer" ng-class="(User.ProfileType=='Pathology')?'bg-success text-white':''" ng-click="SelectProfile('Pathology')"><span class="d-flex flex-fill align-items-center">Hospital Representative</span><img src="assets/img/Symbol%2064.png" style="width: 53px;"></li>
      </ul>
    </div>
  </div>
  <div class="container" style="margin-top: 20px;">
    <div class="card">
      <div class="card-header text-white bg-primary">
        <h6 class="text-white mb-0">Genral Information</h6>
      </div>
      <div class="card-body">
        <form>
```

```
                <div class="form-group" ng-hide="User.ProfileType=='User'"><label>Registration Code</label><input class="form-control form-control-sm" type="text" name="RegCode" ng-model="User.RegCode" placeholder="Enter Tin Number / Doctor Reg. Code"></div>
                <div class="form-group"><label>Name / Shop Name</label><input class="form-control form-control-sm" type="text" name="Name" ng-model="User.UserName" placeholder="Enter Name / Business Name"></div>
                <div class="form-group"><label>Mobile</label><input class="form-control form-control-sm" type="text" name="Mobile" ng-model="User.Mobile" pattern="[6789][0-9]{9}" maxlength="10" placeholder="10 Digit Mobile Number"></div>
                <div class="form-group"><label>Email</label><input class="form-control form-control-sm" type="email" placeholder="Enter Mail Id" name="Email" ng-model="User.Email"></div>
                <div class="form-group"><label>Password</label><input class="form-control form-control-sm" type="password" placeholder="Enter Password Id" name="PWD" ng-model="User.PWD"></div>

                <div class="form-group"><label>Address + ZipCode</label><textarea class="form-control form-control-sm" name="Address" ng-model="User.Address"
            </div>
          </div>
        </div>
    </div>
    <script src="assets/js/jquery.min.js"></script>
    <script src="assets/bootstrap/js/bootstrap.min.js"></script>
</body>

</html>
```

Login Page



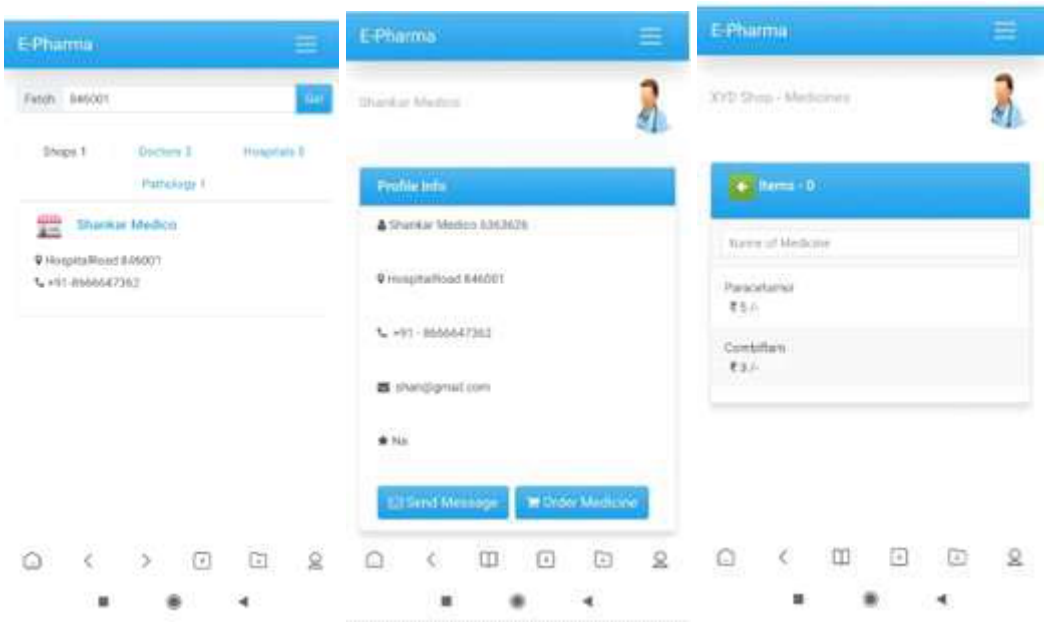
Source Code of Login Page

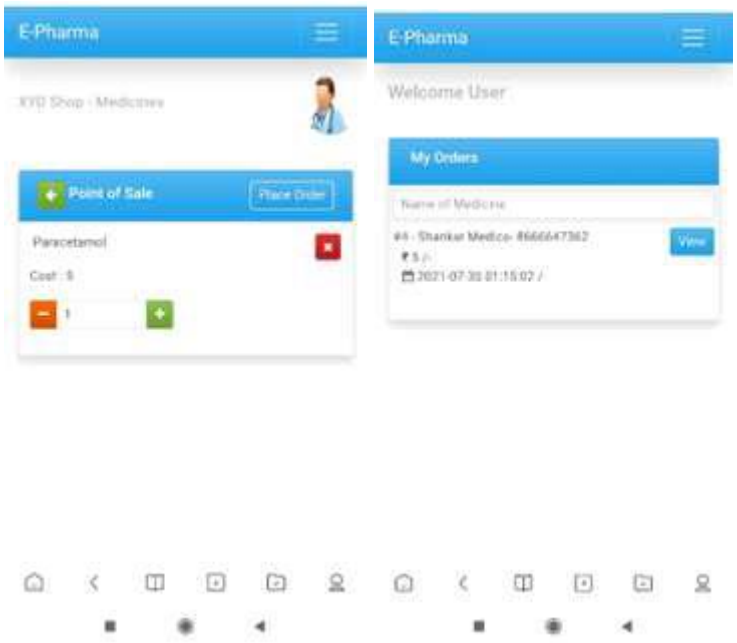
```
<!DOCTYPE html>
<html>

<head>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0, shrink-to-fit=no">
    <title>E-pharma-App</title>
    <link rel="stylesheet" href="assets/bootstrap/css/bootstrap.min.css">
    <link rel="stylesheet" href="assets/fonts/font-awesome.min.css">
    <link rel="stylesheet" href="assets/css/Google-Style-Login.css">
    <link rel="stylesheet" href="assets/css/styles.css">
    <script src="assets/alertifyjs/alertify.min.js "></script>
    <link rel="stylesheet" href="assets/alertifyjs/css/alertify.min.css" />
    <link rel="stylesheet" href="assets/alertifyjs/css/themes/default.min.css" />
```

```
    <script src="assets/js/angular.min.js"></script>
    <script src="assets/js/angular-sanitize.min.js"></script>
    <script>
        var app = angular.module('myApp', []);
        app.controller('customersCtrl', function ($scope, $http, $location) {

            $scope.Email = $scope.PWD = null;

            $scope.Login = function () {
                $http.get("assets/api/LoginApi.php?Email=" + $scope.Email + "&PWD=" +
$scope.PWD)
                .then(function (response) {

                    if (response.data.Status == 'Success') { location.assign('index.html');
return; }
                    else {

    </script>
</head>

<body ng-app="myApp" onload="Load()" ng-controller="customersCtrl" id="Body"
style="font-size: 14px;">
    <div ng-include src="'menu.php'"></div>
    <div class="shadow-lg login-card">
        <img class="profile-img-card" src="assets/img/Bag.png">
        <h4 class="text-center text-success">E-Pharma</h4>
        <h6 class="text-center text-secondary">An Online Medical Solution</h6>
        <!--<div class="alert alert-danger" role="alert"><span><strong>Alert</strong>
text.</span></div>-->
        <p class="profile-name-card"> </p>
        <form class="form-signin">
            <span class="reauth-email"> </span>
            <input class="form-control" type="email" id="Email" required ng-
model="Email" placeholder="Email address" autofocus="" name="Email">
            <input class="form-control" type="password" id="PWD" ng-model="PWD"
required placeholder="Password" name="PWD">
            <button ng-click="Login()" class="btn btn-primary btn-block btn-lg btn-
signin" type="submit"><i class="fa fa-check btn-signin"></i> Sign in</button>
            <a class="btn btn-success btn-block"  href="signup.html" ><i class="fa fa-
plus"></i><strong> New User</strong></a>
        </form>
    </div>
    <script src="assets/js/jquery.min.js"></script>
    <script src="assets/bootstrap/js/bootstrap.min.js"></script>
</body>

</html>
```

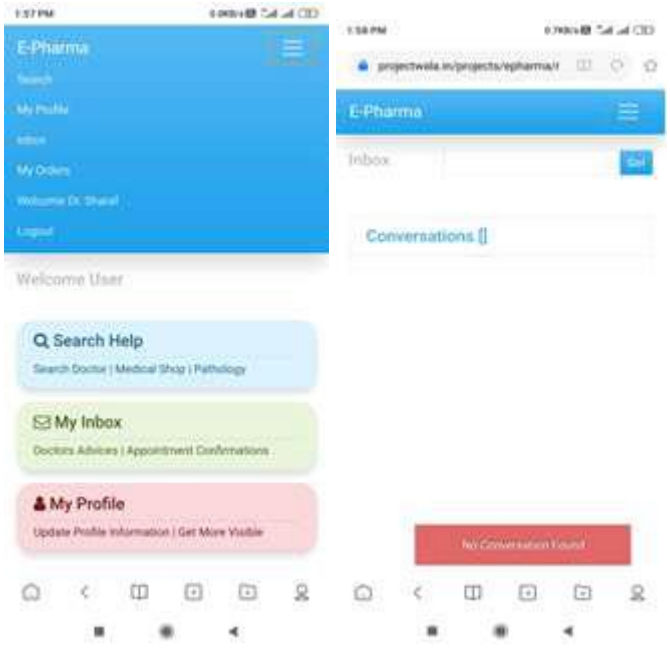
Home Page For User

Actions Performed by User: User can search for available doctor, medical shop, pathology using name or zip code. One can start conversation with any of these and get their problems solved. Booking of appointments, ordering medicine can be done by the user.

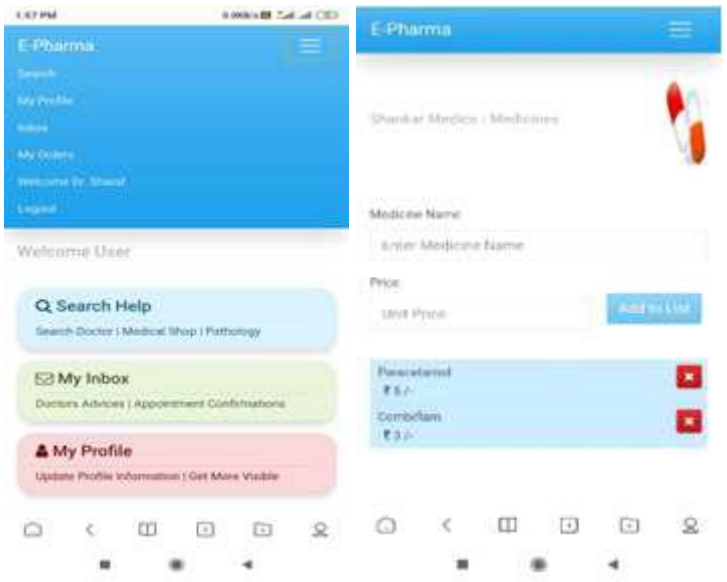


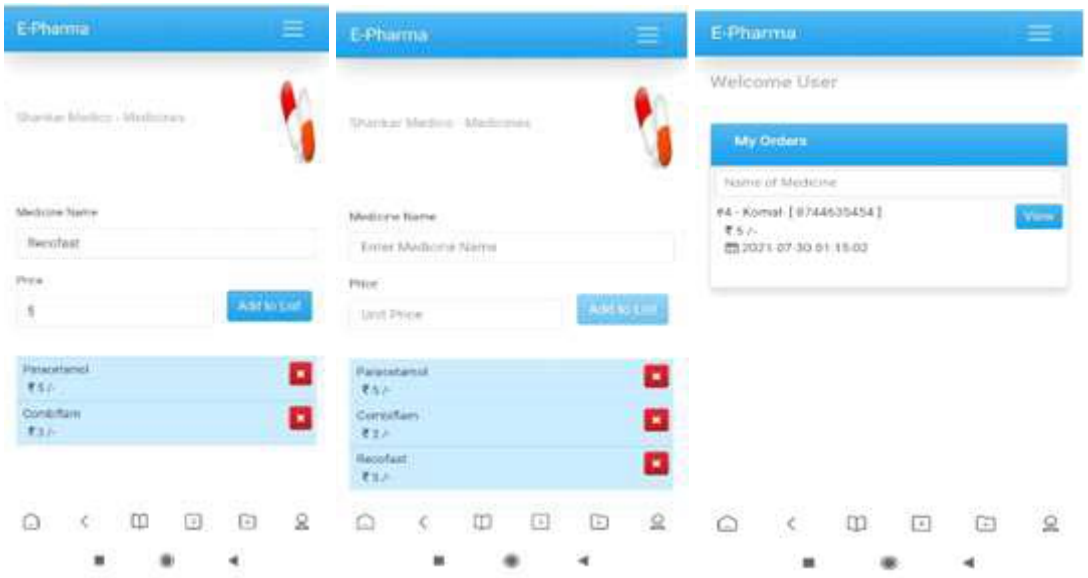


Actions of Doctor: Doctors can create account and connect to the patients through chat.



Shopkeepers Profile: A chemist can create an account and provide the details of available medicine for which order can be placed and connect to user through chat.


E-Pharma
Welcome User
Search Help
My Inbox
My Profile
E-Pharma
Medicine Name
Price
Add to List


E-Pharma
Medicine Name
Price
Add to List
E-Pharma
Medicine Name
Price
Add to List
E-Pharma
Welcome User
My Orders

IMG: