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An Evaluation of the Adoption of Digital App-Based Pharmacy Delivery Services

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Abstract: With the rapid development of technology and the widespread use of the internet, customers now have the option of buying pharmaceuticals and other drugs online, which may have several benefits. Despite this, the percentage of Indian customers that use this technique is still rather low. Very few researches have looked at the attitudes of chemists towards online chemists in India or the intentions of non-adopters. Therefore, the purpose of this research is to examine the viewpoints of community pharmaceutical service providers and investigate the variables that impact the acceptance or non-adoption of this service. With this research, we want to develop novel approaches to enhancing e-commerce platforms in the pharmaceutical industry. In order to gauge Indian customers' familiarity with and adoption of this technique, an online survey was administered to them. To supplement the survey, an interview with Indian pharmaceutical experts was developed. This study will examine how these experts feel about the rise of e-commerce in the country's pharmaceutical industry. According to the findings, a sizeable fraction of the Indian population is familiar with the concept of buying pharmaceuticals and other treatments online. Despite this, the vast majority of people have never utilised this service to buy a product like this before. The interviews may have shown that, despite growing optimism, community chemists in India still have some reservations about purchasing medications online. Conclusions that improved marketing tactics, suitable organisational structures, and well defined logistical procedures that allow for rapid conveyance and efficient delivery were drawn from these findings.

Keywords: *internet shopping, pharmaceuticals, and health care items*

1. Introduction

Consumers now not only use the internet to learn about health issues, but also to self-diagnose and purchase a wide range of health products and services. A website that offers drug delivery, distribution, or administration via the internet is called an "online pharmacy." Consumers' familiarity with online shopping, the convenience of mail-order and distance selling, and the decline in face-to-face medical visits are all factors driving the expansion of the online pharmacy industry[1][2]. Customers are increasingly opting to buy medicines online rather than visiting a local pharmacy. Here you can find a plethora of online pharmacies and other medical supply retailers. Many of these are reliable establishments that deliver on their promises of convenience and anonymity[3]. The level of trust that consumers have in their local pharmacies should be applied to these services[4]. Due to the recent growth of e-commerce in India, more and more people are turning to online pharmacies to get their prescription[5]. The online pharmacy is expected to be a hot issue in the coming days. The idea of selling medicines via the internet is not novel. Recent years have seen its growth as a result of the internet. For a long time, local Indian communities relied on their pharmacies as their primary supply of pharmaceuticals. However, retail pharmacies do well in the country's most remote areas[6-9]. Most Indians don't buy medicine from online pharmacies, maybe because they don't know about them or because they don't have access to modern conveniences like the internet. Whatever the case, the situation is changing right now. Since the availability of smartphones, internet connectivity, and computer knowledge have all increased. Customers may benefit from online pharmacies in several ways, including lower rates, home delivery, ease of use, and medication reminders.

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Businesses advocate for the uploading of medicines as a means of avoiding serious health risks[10]. Customers may get their drugs from pharmacies online and have them delivered to their houses. Most of these apps provide a wide variety of healthcare items, making it convenient for customers to download them to their smartphones, shop, and pay for their purchases. Customers may have genuine medications delivered right to their house, and they could even save money if they buy them online.[11]

The adoption of digital app-based pharmacy delivery services has witnessed significant growth in recent years, transforming the way individual's access and receive their prescription medications and healthcare products. These services offer an innovative approach to address various challenges in the healthcare sector, ranging from improving medication adherence to enhancing convenience for patients[12]. As technology continues to reshape the landscape of healthcare delivery, it is crucial to assess the impact and implications of these digital pharmacy services on both healthcare providers and patients[13].

This evaluation aims to explore the key factors driving the adoption of digital app-based pharmacy delivery services, the benefits they offer, and the challenges they may pose. It also delves into the potential implications for traditional brick-and-mortar pharmacies, regulatory considerations, and the overall impact on healthcare accessibility and quality[14]. Through this evaluation, we seek to provide a comprehensive overview of the digital app-based pharmacy delivery service landscape, shedding light on the potential advantages and concerns associated with their widespread adoption.[15]

In recent years, the proliferation of smartphones and the increased availability of high-speed internet have paved the way for the growth of digital pharmacy platforms. These platforms offer a range of services, including the online ordering of prescription medications, over-the-counter products, and healthcare supplies. Once an order is placed through a mobile app or website, these services facilitate the prompt delivery of medications to the patient's doorstep, often within a matter of hours[16].

The primary factors driving the adoption of digital app-based pharmacy delivery services include:

Medication Adherence: Digital platforms often include features that help patients manage their medications, providing reminders for dosage and refills. This can significantly improve adherence to treatment regimens.

Cost Savings: Online pharmacies may offer competitive pricing and discounts, potentially reducing the financial burden of healthcare for patients.

Accessibility: Digital pharmacy services have the potential to bridge the healthcare access gap, allowing individuals in underserved or rural areas to receive medications and health products more easily.

Enhanced Privacy: Some patients may prefer the discreetness and confidentiality offered by digital pharmacies, particularly when dealing with sensitive healthcare issues.

Expanded Product Range: Digital platforms can offer a broader range of healthcare and wellness products beyond prescription medications, catering to a wider array of healthcare needs.

However, the rapid adoption of digital app-based pharmacy delivery services also raises concerns and challenges. These include:

Regulatory Compliance: Ensuring that digital pharmacies adhere to regulatory requirements and quality standards is paramount to ensure patient safety.

Security and Privacy: Protecting patients' personal and health information from data breaches and cyberattacks is a significant concern.

Impact on Traditional Pharmacies: The rise of digital pharmacies may have implications for traditional brick-and-mortar pharmacies, potentially affecting their business models and viability.

Lack of In-Person Consultation: The absence of face-to-face interactions with healthcare professionals may limit the ability to ask questions and seek advice about medications.

Pharmacist-Patient Relationship: The digital pharmacy model may weaken the pharmacist-patient relationship, which is traditionally built on trust and personal interaction.

Medication Safety: Ensuring the safe dispensing and use of medications is crucial, especially for patients with complex treatment regimens or multiple medications.

This evaluation will delve into each of these factors in more detail, providing an in-depth analysis of the adoption of digital app-based pharmacy delivery services and its impact on healthcare delivery, patient outcomes, and the broader healthcare ecosystem. Additionally, it will consider potential avenues for future research and development in this evolving field[18][19].

2. Literature review

Buying decisions are increasingly informed by a variety of sources of data (Ante, 2009). Online pharmacies have been more common since the late 1990s.

When compared to only traditional pharmacies, online pharmacies can reach a wider clientele and reduce

infrastructure costs (Makinen et al., 2005). This benefits both the customers and the businesses running the online pharmacies.

There are, nevertheless, still many dangers associated with buying drugs and health supplies online. Unlicensed pharmacies, which may not guarantee medication quality, drug safety, or legal distribution, as well as hidden fees added to drug pricing, are the most often stated hazards (Davis, 2007). Although the first online pharmacies opened for business in the United States in 1999, the practise of using the internet to sell and distribute prescription and OTC medications has not caught on in Europe.

There is a void in the research discussing the elements that impact customer and community pharmacy adherence to this business model. To assess the need of developing strategies to overcome the inherent hurdles in the European setting, we need a deeper understanding of the obstacles to the adoption and implementation of pharmaceutical e-commerce.

According to Sah et al. (2018), the online medication industry in India is expanding at a fast rate. Convenience is the primary driver of online buying. The Asia-Pacific area has several potential for online pharmacy. Pharmacist, MedLife, Pharmeasy, 1mg, and NetMeds are the top five online pharmacies for prescription pharmaceuticals at this time. As has been noted, both traditional stores and online marketplaces are growing at a rapid rate . In the Indian city of Jaipur, E-pharmacies (online pharmacies) are firms that offer medications and health items via internet commerce and have specialised ways of delivery (Rahaman et al., 2019). There are three main types of online pharmacies: "click-and-mortar" pharmacies, in which the website functions as an extension of a local brick-and-mortar pharmacy.

Customer purchase patterns for online pharmacies were analysed by Gupta et al. (2020). Consumers, according to the findings, have a good understanding of online pharmacies. The people of Jaipur have access to both brick-and-mortar drugstores and online dispensaries for their pharmaceutical needs. There is still more work to be done by the government and other relevant institutions to ensure the public is aware of the many dangers associated with using an online pharmacy.

Pujari et al. (2016) conducted research on how often people buy prescription and OTC medications. Although other sources such as magazines, online articles, family, and friends were as important, only 60% of consumers bought their medications based on a doctor's suggestion. Patients do not value advice from their doctors and chemists above cost when making drug decisions, the author argues.

Several variables that affect the general public's willingness to utilise online pharmacies are the topic of a research by Anwar et al. (2020). Simplicity, economy, and privacy are three of the most important aspects. The author has cited a number of other reasons for India's e-pharmacy's rapid expansion, including the Digital India plan, an e-healthcare push by the Indian government, and foreign direct investment. Singh et al. (2020) looked at the effects of e-pharmacy on both society and the pharmaceutical industry during a period of economic crisis. The effects of internet pharmacies on the COVID-19 epidemic are the topic of this study. The goal of all online pharmacies is to offer low-cost medication delivery worldwide. Self-medication, however, is a major issue with regards to internet pharmacies. The popularity and efficacy of online pharmacy among Indian customers was studied by Srivastava et al. (2020). Since most people aren't aware of the advantages of using an online pharmacy, it's important to highlight their usage and benefits in addition to providing more client training. Customers preferred to fill their prescriptions online in the case of an emergency due to the convenience of "home delivery" of medications ordered online. The data points to the e-pharmacy app being simple to use. If customers could easily access inaccurate or out-of-date information, they could start to doubt your reliability.

Health apps for blended pharmaceutical care

The growth and progress of technology are continuously amazing. As a consequence of some of these technical developments, a wide variety of business activities are now conducted online. R&D-heavy sectors, like the pharmaceutical industry, are the most likely to adopt cutting-edge technology in order to maintain a foothold in their respective markets. When it comes to facilitating the flow of information and the completion of transactions between businesses and people, e-commerce has been gaining ground as a method of communication, strategy, and business practises. The advent of e-commerce revolutionised not just the retail sector but also the healthcare business (Alsadoun et al., 2020). Customers can make safe and hassle-free purchases of health products and services, and the pharmaceutical industry gains a competitive edge and stable growth. This benefits the customer as well, who can have their prescriptions delivered to their door or picked up at a local pharmacy. While internet pharmacies have many benefits and are rapidly growing, there are several barriers to entry that prevent this business model from being widely adopted. Cooperation between public and commercial sectors, scientific organisations, and academic institutions is crucial if we are to overcome the existing restrictions and increase healthcare support.

Care that is "blended" mixes in-person medical attention with remote monitoring and other forms of digital health assistance. It's a more all-encompassing kind of health care that gives patients access to the advantages of both traditional in-person treatment and care facilitated by technology. Health apps are one example of a digital component to integrated care. An "app for health" is one that may be downloaded into a mobile device and used for a variety of purposes related to maintaining one's physical and mental well-being. There are dozens of health applications available in app stores, and they all promise some combination of better health information, easier wellness management, faster diagnosis, more individualised care, and lower costs. They are a helpful alternative for those who are unable to see doctors since they may be accessed from any location at any time.1 As the number of patients who need care rises, but the quantity of workers able to deliver it falls, blending care in a pharmacy is an essential component of a sustainable future care model. If users make decisions that lead to negative outcomes like unnecessary hospitalisation or addiction, it is the responsibility of the pharmaceutical industry to guarantee the supply of necessary information and treatment.

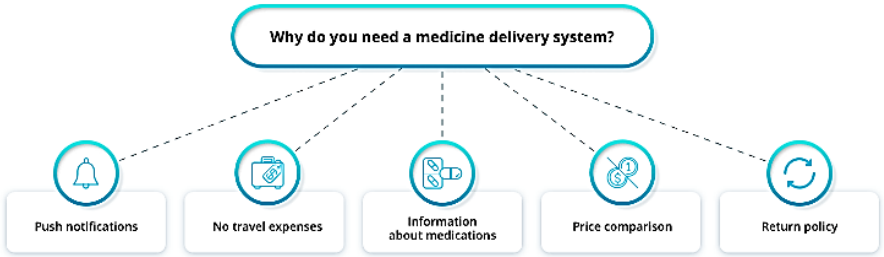

Fig 1. Overall Medicine delivery system

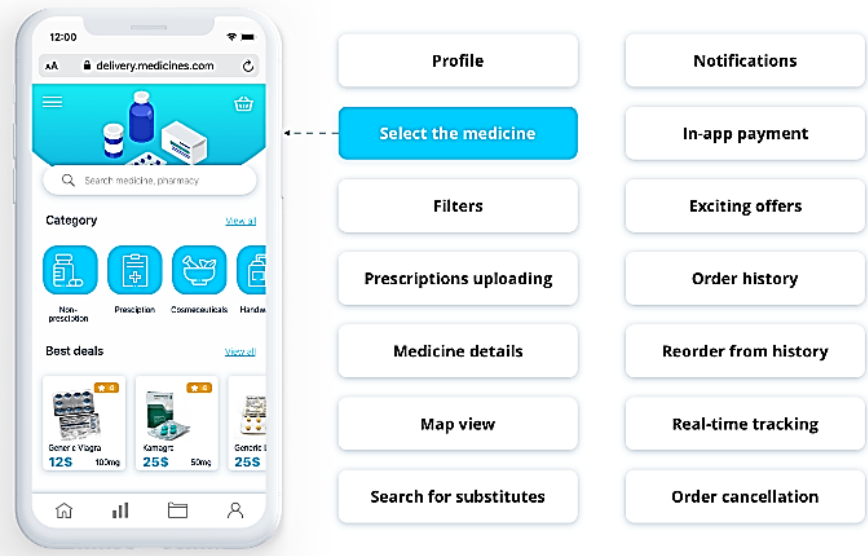

Fig 2.Mobile Apps Based medicine Ordering and Delivery software with all Features

3. Research Methodology

The researchers use an exploratory approach based on primary data to compile their findings. Respondents are those who have used the digital app to purchase medications. There are 749 participants in the data set. Questionnaires are used as the major data gathering tool. To learn how people feel about the digital app and its benefits and drawbacks in providing pharmaceutical services, we compiled a series of questions in a logical manner. SPSS is used to analyse primary data. The study of goals and the testing of hypotheses makes use of both descriptive and inferential statistics.

Objectives of the study are as follows:

1. Examining Digital App Based Pharmaceutical Services for Satisfaction and Difficulties.

2. Examining the aspects and hurdles that affect users' happiness with digital App-based pharmaceutical services

Data Analysis

Primary data analysis involves sorting respondents into categories based on their characteristics. Table 1 displays data categorization information.

Table1: Statistics and interpretation of the many characteristics of a population are at the basis of the field of demographics.

Demographics		**Frequency**	**Percent**
Gender	Male	122	58.4
	Female	162	62.8
Agegroupofrespondents	Up to25years	120	54.3
	26to 40years	40	17.2
	40to 60years	68	30.6
	Undergraduate	59	24.5
Qualificationof respondents	Graduate	110	48.3
	Postgraduate	60	29.2
	Professional	18	7.8

Based on the breakdown by gender in Table 1, we can see that out of a total of 749 respondents, 122 are male and 162 are female.

Table 2: The analysis of variance (ANOVA) was conducted to examine the relationship between the age of the respondent and the variables of interest.

		Sum ofSquares	**df**	**MeanSquare**	**F**	**p-value**
Influencing Factor	BetweenGroups	1120	2	518.52	2	0.426
	WithinGroups	82666.15	222	531.401		
	Total	83786.15	224			
Challenges	BetweenGroups	5025.235	2	3811.726	18.6	0.525
	WithinGroups	21155.980	212	107.523	2.0	0.323
	Total	26181.215	214			
Satisfaction	BetweenGroups	7602.204	2	3801.267	19.977	.000
	WithinGroups	41291.102	217	190.282		
	Total	48893.306	219			

The computed p-value for the influential factor is 0.426. It's a number bigger than 0.05. As a result, the F-test is recognised. The results show that the average ratings of influential variables do not vary much with age.

4. Findings and Discussion

Results from primary research examining all three factors. Influencing factors, difficulties, and satisfaction with digital App-based delivery of pharmaceutical services are the three factors under investigation. The three factors are independent of one another regardless of gender. Both men and women report the same difficulties and degrees of happiness. The difficulties faced by male and female responders are not significantly different. It is supported by primary and secondary sources alike. Male and female respondents express similar levels of contentment. There is a statistically significant correlation between the age of responders and the other three factors. Respondents in the middle age range have the most influence. The elderly face the greatest difficulties.

5. Conclusion

Following the start of COVID-19, a growing number of Indian customers are turning to digital services as their major method of sourcing. When it comes to self-medication, there is a pressing need for more research that contrasts the relative dangers posed by shopping at traditional brick-and-mortar pharmacies with those posed by purchasing medicines online. Customers benefit in a

variety of ways from shopping at online pharmacies, including reduced pricing, streamlined ordering procedures, expanded access to a larger range of brand names, and an easier time comparing prices. Nevertheless, there are quite a few disadvantages associated with purchasing medications over the internet. These include the chance of obtaining the incorrect order, a lack of prescription prescriptions, difficulty with returns, the sale of low-quality items, and so on. Other potential issues include a shortage of prescription prescriptions. The goal of this study is to determine which characteristics, obstacles, and levels of customer satisfaction are connected with the use of digital app-based pharmaceutical delivery services in India.

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