



## Online Pharmacies – A New Prescription for Health in India

Shraddha S Bandivadekar

*Shobhit Institute of Engineering and Technology, Meerut, India*

---

### Abstract

Online pharmacies are e-commerce websites selling medicines, wherein retail sale of medicines, drugs and pharmaceutical products are carried out through the internet. Purchase of online medicines can be carried out using a computer or mobile device. Online pharmacies can play a crucial role in making healthcare products and services accessible to customers and they provide consumers with a huge variety of products to choose from, at competitive prices. Online pharmacies have many advantages over the physical pharmacy stores. However, along with these advantages, there can be many disadvantages and risks associated with buying medicines online including the risk of fake medicines, risk of self-medication if medicines are not obtained with a valid doctor prescription. Currently, online pharmacies are at a nascent stage in India and are currently in a state of flux in terms of regulations and consumer adoption. However, there is ample scope and opportunity for the growth of online pharmacies in India, owing to the unmet needs of Indians with respect to healthcare. Online pharmacies can prove to be beneficial considering the deficiencies that exist in the current Indian healthcare system with respect to the availability of quality healthcare. Additionally, there could be concerns about the usage of online pharmacies by the population at large considering the low literacy rates and the highly heterogeneous socio-economic structure in the country. There is a significant proportion of the Indian population willing to try purchasing medicine and related products online. The present research paper focusses on the relevance of online pharmacies in the Indian context, exploring the opportunities and challenges associated with them, and how online pharmacies can be a game-changer in the current Indian healthcare scenario.

**Keywords:** Online Pharmacies, Online Sale of Drugs, Digital Healthcare, E-Commerce

**JEL Classification:** M31

**Paper Classification:** Research Paper

---

### Introduction

E-commerce, electronic commerce is the name used for trading of goods and services with the help of the internet. E-commerce uses technologies such as supply chain management, mobile-commerce, electronic fund transfer, automated data collection etc. Additionally, technologies like e-mail marketing (which use email, websites, micro sites), search engine optimization (SEO), co-registration, advertising on search engines, and mobile marketing are also in use. The scope of e-marketing is broadening and there is no doubt that e-commerce has a universal appeal. It



has been used extensively in all industries like education, medicine, industrial goods, banking, agriculture, etc. Technological advances have been readily adapted in the healthcare sector as well.

According to a report by Internet and Mobile Association of India (2016), urban India was said to be fast adopting e-commerce, online payments and transactions through the internet. Although the popularity of these services was growing, they were still very limited in spread and scope especially in rural India. Despite these challenges, e-commerce has grown exponentially over the past two decades, globally. India was seen to be adapting to e-commerce rapidly with the increasing internet penetration, growing mobile technologies, advanced digital payment infrastructure. There are areas like consumer products, apparel, mobile and electronics which have seen significant success in the online space. However, the healthcare space still remains largely unexplored.

As per a research report by Parekh, Deepak, Kumar and Choudhury (2013), the Indian consumer was described to be price sensitive with discounts being viewed as a major incentive for online shopping. All these factors were said to be driving Indian consumers from offline to online shopping. Regulatory support is essential from the government for the online retail sector to grow further. There is absence of e-commerce laws in India and a revision is also required in the sales tax laws. Air travel, books, apparel, electronic goods were said to dominate the online retail space. Pharmacy, health and personal care are still unorganized sectors online and form a miniscule percentage of total industry sales figures. Some of the challenges associated with the growth of e-commerce in India include lack of clarity in laws regulating e-commerce, unqualified manpower, rapidly changing business models and the low entry barriers. E-Commerce has shown tremendous growth potential due to growing market demand, support from the government and interest expressed by venture capitalists.

Sale of medicines on the internet is growing in popularity. As per a study by Orizio, Merla, Schulz and Gelatti (2011), online pharmacies are companies that sell medicines and health products using the Internet. A variety of drugs can be purchased online with the help of businesses called online pharmacies. Online pharmacies are also known as internet pharmacies, cyber-pharmacies, e-pharmacies, etc. Online pharmacies sell prescription drugs (medicines that require a doctor prescription), beauty products and also over-the-counter drugs (OTC - which does not require a doctor's prescription). In addition, some of these online pharmacies offered some value-added services like doctor consultation, etc. As per George (2006), in developed countries like the United States of America (U.S.A.), online pharmacies have been in existence since January 1999 with the opening of Soma.com – the first ever online pharmacy in the world. However, since 1872, sale of pharmaceuticals through mail order has been prevalent in the U.S.A. In the United Kingdom (U.K.), Internet pharmacies began operation in November 1999 with the opening of Pharmacy2u.co.uk.

According to the book, Personalised healthcare (2014), purchase of pharmaceuticals over the internet is a common phenomenon globally. Purchase of medicines can be considered a very personal matter associated with illness, craving addiction and despair which acts as motivational factor for purchase. In addition, the less regulated nature of the internet is another contributing factor. Globally, there are various ways in which the sale of medicines takes place over the internet. People may buy from licensed suppliers approved by national authorities. In countries like the Great Britain, there are systems in place for registering and inspecting online pharmacies. There are people who buy medicines, banned for sale in their own country, over the internet with the help of online pharmacies based in other countries. The nature of these suppliers is questionable as they may be operating legally or illegally in their own country. It is difficult to

track pharmaceutical sales across borders. The broader concern is a shift in the way people are perceiving and using healthcare systems where the consumers now wield greater power and are more responsible for their healthcare purchases. In recent times, there has been a shift towards greater patient involvement in medical decision-making processes, and a lot of these decisions do not involve the doctor.

As per a research study by Fung, Woo and Asch (2004), online pharmacies are an appealing alternative to local pharmacy stores and are receiving good response from consumers. While they offer a lot of advantages to consumers, there are various legal, ethical and safety issues associated with sale of medicines over the internet. However, as per Henney (2001), despite these concerns, the popularity of the internet as a source for medicines sales was growing and this was evidenced by the growing interest of investors keen to support online pharmacy portals. Patel and Ashok (2016) described that, especially in India, the online pharmacy market has observed remarkable growth in the past few years. Investors are showing interest in online pharmacies as this model looks feasible.

### **Statement of the Problem**

While the merits and demerits of online pharmacies have been well studied, across a number of national and international publications, the opportunities and challenges for online pharmacies in India are quite unique in nature. These are mainly because of the diverse demographic structure of the Indian population and the state of the healthcare system in the country. Online pharmacies are at a nascent stage in India and the laws and regulations related to them are still evolving. However, with the tremendous scope and growing interest in online pharmacies in the market, these issues are likely to get resolved in the long term. With this background, the current study aims to explore and describe the opportunities for the growth of online pharmacies in India and understand the challenges faced by them.

### **Objectives of the study**

- To evaluate current scenario of online pharmacy business in India
- To evaluate feasibility of online pharmacies by understanding opportunities and growth drivers for online pharmacy business in India
- To study emerging challenges faced by online pharmacy businesses in India
- To understand the future scope of growth of online pharmacies in India

### **Need and scope of the study**

Online pharmacies are at a nascent stage in India and are operating in a regulatory gray area, at the moment. With the regulations still evolving, the online pharmacies are still in a state of turmoil with respect to both laws and consumer adoption. Most of the research studies focus only on the advantages and disadvantages of online pharmacies to the end consumer in the Indian context with little focus on the environment where these businesses are operating. The Indian demography is unique as compared to countries like U. S. A. (United States of America) and the U. K. (United Kingdom) where online pharmacies are widely studied. Therefore, the opportunities and barriers are also unique in the Indian context. These, however, have not been studied in great detail in the Indian context. This study aims to fill this gap by understanding the feasibility of online pharmacy businesses with respect to opportunities and challenges and understand the future scope for their growth.

## Methods

The study followed an exploratory and descriptive research design. The objective of the exploratory study was to get deeper insights into the opportunities and challenges faced by online pharmacies, specifically in the Indian context. Being descriptive in nature, the study described the challenges and the opportunities of online pharmacies in detail. The study involves the use of secondary data including a review of national and international literature including books, research papers etc. to gain an understanding of the online pharmacies in India. The findings have been collated and presented in the form of research findings.

### Literature review

According to the report by Internet and Mobile Association of India (2016), urban India is fast adopting e-commerce, seen through the growing rate of online payments, online bookings for transportation services. Although these services are growing, their spread is limited especially, in certain areas of the country. The study described that there is great scope for the growth of internet and allied services in India, citizens need to understand the benefit of the online space. For this, benefits of the internet need to be communicated to the public at large.

According to Singhi and Bajaj (2017), adoption of digital technologies in India is faster than any other technologies of the past. Impact of digital marketing is becoming pervasive across all consumer segments. India is estimated to have around 850 million internet users by 2025.

Technology can help bridge the gap in availability of drugs. Computer plays an important role in the community's day to day activities and are ubiquitous to pharmaceutical research and development. Internet has given rise to an information driven society. According to Anand et al. (2010), Internet penetration reached 150 million people in a matter of 5 years while the television and radio took 13 years and 38 years respectively. Access, convenience and speed are the positives that have made the internet a medium for knowledge exchange and e-commerce. This has had an impact on the healthcare industry as well. Medications can be ordered through the internet at the click of a button. Various health related products and services are available to the public and healthcare professionals through the medium of the internet. The large number of drugs being sold over the internet pose ethical, legal and quality challenges. The reason behind this is the anarchic nature of the internet which makes it very difficult to monitor and regulate and these challenges are important from the physician, consumer and regulator's perspective. On a positive note, internet pharmacies can prove to be extremely convenient and save both time and cost for the end consumers. Other advantages of internet pharmacies include choice of wide selection of drugs, no consulting fees, avoiding visits to the pharmacies. In the Indian context, online pharmacies offer a number of advantages which may help the population at large.

As per a study by George (2006), a variety of drugs can be purchased online with the help of businesses called online pharmacies. Online pharmacies are also known as Internet Pharmacies, cyberpharmacies, ePharmacies etc. In developed countries like U.S.A., online pharmacies have been in existence since January 1999 with the opening of Soma.com – the first ever online pharmacy in the world. However, since 1872, sale of pharmaceuticals through mail order has been prevalent in the U.S.A. In the U.K., Internet pharmacies began operation in November 1999 with the opening of Pharmacy2u.co.uk.

According to the book, Personalised healthcare (2014), purchase of pharmaceuticals over the internet is a common phenomenon. Purchase of medicines can be considered a very personal matter associated with illness, craving addiction and despair which act as motivational factors

for purchase. In addition, the less regulated nature of the internet is another contributing factor. Globally, there are various ways in which the sale of medicines takes place over the internet. People may buy from licensed suppliers approved by national authorities. In countries like the Great Britain, there are systems in place for registering and inspecting online pharmacies. There are people who buy medicines, banned for sale in their own country, over the internet with the help of online pharmacies based in other countries.

Fung et al. (2004) describe the three types of online pharmacies in detail: (1) an independent internet only company, (2) a company with both physical and online stores and (3) a group of pharmacy stores that have formed websites to represent themselves.

According to a research report by Jaisani, Pant, Shivam, Singh and Suhasini (2015), India can benefit from the growth of online pharmacies due to the following reasons that are specific to India:

- Pharmacies are the first points of access to medicines for consumers. However, in India, urban areas have higher density of pharmacies than rural areas.
- Due to the nuclear family system, the elderly have reduced access to medicine. People in remote areas need to travel long distances to acquire medicines.
- Retail stores may be short of required stock or specific brands and consumers may need to visit multiple stores for procuring specific medicines.
- Patients suffering from chronic conditions like diabetes, hypertension, etc. need regular medication in which case medicine refilling becomes an issue and leads to non-compliance.
- Changing lifestyle – Goods are being increasingly ordered online
- Rising burden of diseases – there has been a shift from acute to chronic illnesses both in rural and urban India
- Online pharmacies offer multiple options at varied prices
- Easy availability of medicines to the rural and remote parts of the country
- Online pharmacies can bridge this gap by providing easy and affordable access to medicines
- Improves awareness regarding medicines amongst common man
- Rare medications can be acquired with more ease as online pharmacies can access an inventory of multiple stores at a time and aggregate supplies.

In all the above cases, online pharmacies can be of immense value by improving accessibility of medicines and thus empowering the consumer.

A cross sectional study by Sah et al. (2018) conducted in New Delhi, the capital of India, revealed that 85.8% of the study respondents were aware about online pharmacy. However, only 6% of them purchased medicine through it. The apprehensions regarding buying online were quoted as uncertain delivery timelines and risk of counterfeit medicines while the advantages were home delivery and reminders.

According to Ayub and Mustafa (2017), online pharmacies disrupt the way retail pharmacy business is being conducted in the country. Therefore, online pharmacies are facing opposition from the physical pharmacy stores in the country. The AIOCD (All India Organisation of Chemists and Druggists) is a union body of unorganized retail. The AIOCD called for an all India strike

3 times in two years against the online pharmacies. First strike was held on 14 Oct, 2016; second strike on 23rd Nov 2016 and the third strike was called by union on 27th May 2017. Continuous strikes by leading pharmaceutical bodies shows the seriousness of retailers regarding the proliferating online retail pharmacies in India.

A study by Trivedi (2017), describes the impact of regulatory issues on the online pharmacy market. Owing to all these problems, there was a temporary slump observed in the pharma market. Investments in online pharmacy sector in India showed a decline from 2016 as compared to 2015. Online pharmacies in India received total funding of \$28.45 million in 2016, compared with \$62.20 million a year ago. Also, the overall funding in health tech was also down at \$92.35 million in 2016 from \$321.85 million in 2015. This decline has been attributed to the atmosphere of regulatory uncertainties yet the companies and investors were positive about 2017, betting on the country's large market size. However, considering the benefits of online pharmacies, the government's stance remained positive.

A news report by Bhatia (2017), outlines the steps taken by the government to regulate and streamline pharmacies. The IIPA had put forth a self-regulating code of conduct, under which no online pharmacy can sell scheduled medicines without a doctor's prescription. Online pharmacies can only tie up with licensed chemists and can sell medicines only on a valid doctor prescription. One of the suggestions by IIPA was to link every medical prescription with the buyer's Aadhaar number to enable efficient monitoring of medicine sales. Before this, IIPA had urged the government to legally recognize the existence of online pharmacies. This indicates a positive step towards online pharmacies.

Thacker (2017), describes efforts taken by the CDSCO (The Central Drugs Standard Control Organisation) to regulate operations of online pharmacies. CDSCO is a regulator for pharmaceuticals and medical devices in India.

- As of 2017, the health ministry had initiated discussions to frame a policy that will facilitate access to quality medicines and encourage more entrepreneurs to sell medicines online.
- The government was planning to set up an electronic platform that would act as the nodal platform to monitor movement of medicines.
- Under this platform, the supply of any drug was to be made against a cash or credit memo generated through the electronic platform with the soft and hard copies of memos to be maintained by the licensee.
- Drugs were categorized into five schedules which ranged from medicines with limited risk to those having greater drug abuse potential:
  - Third schedule - covering all over-the-counter drugs;
  - Fourth schedule - covering all prescription drugs;
  - Fifth schedule - covering all antibiotics and anti-bacterial drugs;
  - Sixth schedule - covering all narcotics and psychotropic drugs;
  - Seventh schedule - covering all medicines that do not fall under the other schedules.
  - There were no first or second schedules.

The draft proposal described the difficulty of getting refills and repeat orders.

According to the news report "Indian E-pharma with Muddled Regulatory Norms" (2017), online pharmacies are suffering from major concerns like the misuse of technology, safety of electronic prescriptions and opposition from brick – and-mortar pharmacies. In order to bring

these regulatory roadblocks by regulatory bodies to notice and to resolve them, the Indian Internet Pharmacy Association (IIPA) was taking serious efforts. While the IIPA members were striving hard to operate legally and follow regulations, it has taken up as its mission to clarify the fact that the lack of a proper regulatory framework and not the non-adherence of regulations that has become a stumbling block for online pharmacy start-ups. In July 2016, a sub-committee to the 48th Drug Consultative Committee by Drugs Controller General of India (DCGI) formulated guidelines on the use of technology in pharma. This committee was expected to submit a report within three months (by October 2016), but had failed to do so. E-pharmacies can solve a lot of problems that traditional pharmacies cannot. The IPA committee had claimed to have made all efforts to bring up the issue, and had suggested best practices from around the world to design a framework.

According to a research report by Madan, Mehta, and Kumar (2019), India is leading producer of pharmaceutical preparations, however, the access to medicines in the country is highly skewed. Despite being a growing e-commerce market, the area of online pharmacies is not very well established. Online pharmacies are expected to grow at a CAGR of 18.1% and have great potential for growth in the Indian market.

A study by Chakraborty and Satsangi (2019) studies the current scenario of the online pharmacy space in India. The study describes the scope and growth of online pharmacies in India and how offline pharmacies are protesting against these online players. There are around 150 start-ups operational in India as on date including companies like Netmeds, PharmEasy, Myra etc. However, there is still a need for adequate regulations in this area, especially because pharmacy retail is a sensitive area, as it pertains to the health of a community at large.

A study by Mani, Danasekaran and Annadurai (2017), discussed the advantages and disadvantages of online pharmacies, and the steps taken by regulatory bodies to streamline the operations of online pharmacies in India. The study discussed how unregulated online pharmacies can prove to be a threat to public health and the measures taken by the government to tackle the same and how unregulated pharmacies could promote sale of counterfeit drugs and self-medication and concludes that online pharmacies can prove to be beneficial to public health at large, if properly regulated.

According to Rajagopal (2016), online pharmacies may act as a bypass to the doctor-patient relationship, wherein patients can self-diagnose and directly procure medicines from online pharmacies. This can lead to instances of self-medication, drug abuse and adverse events. Healthcare professionals need to play an active role in this area and maintain a healthy dialogue with patients apprising them of the risks of buying medicines from online pharmacies and following through the patients about the medicines consumed in course of the treatment.

Patel and Ashok (2016) discussed the regulatory hurdles faced by online pharmacies in India as there is a lack of clear guidelines pertaining to online pharmacies. The laws pertaining to online pharmacies include the Drugs and Cosmetics Act, 1940; Pharmacy Act, 1948, Drugs and Cosmetic rules, 1945; Indian Medical Act, 1956 and The Information Technology Act, 2000. These laws are old and were formulated before the advent of online pharmacies, and are ambiguous and inadequate to control the sale of medicines through the internet. The study recommended measures to regulate online pharmacies in the country keeping patient safety in mind.

News report by Dasgupta and Khosla (2018), described how the e-pharmacy sector in India is booming. Indian online pharmacies were increasing hiring and planning to double their employee count by year 2019. Online pharmacies in India like 1mg, Netmeds and PharmEasy, with about 700-1,000 employees each were completing around 1,000 orders a day. Others like

Medlife, EasyMedico, Myra Medicines, and mChemist were found hiring for various positions like pharmacists and tech staff. The online sector was growing at 10% with funding being the main reason driving recruitments. Hiring in the e-pharmacies was getting more specific for medical roles like pharmacists, botanists, marketing and tech experts. India is home to about 50 e-pharmacy startups which have raised \$92.6 million in funding. The sector has presented an exciting new opportunity and there is a demand for employees to do on-the-ground jobs. It was said that the federation expects 10,000-15,000 people to be hired at e-pharmacies within six months. For example, Netmeds – a leading online pharmacy in India was planning to double its strength from the existing 500 and also looking at hiring pharmacists and increasing their warehousing facilities. Another operator PharmEasy, with 800 people, was planning to hire 235 tech professionals across India. Other online pharmacies like 1mg were opening up around 600 roles like front-end customer service, delivery personnel, pharmacists, diagnostics, botanists, healthcare workers and technology in the coming year. The growth in this sector was said to be propelled by increased Internet penetration, according to a report by the Federation of Indian Chambers of Commerce and Industry. The country's pharmaceutical market was expected to expand at a compound annual growth rate of over 15% to reach \$55 billion by 2020 and e-pharmacies were said to make up about 1% of the business. The report concluded with the statement that the online pharmacy business in India holds tremendous potential for growth.

According to another news report by Vignesh (2018), online pharmacies were said to be employing services of data scientists to analyze consumer data and come up with interesting models and product ideas for the future. The idea was to broaden the array of services being provided to the customers. Online pharmacy players were venturing into areas such as insurance and private label medicines by making use of big data. With the objective of diversification in mind, online pharmacies were hiring teams of data scientists for the sake of experimentation and future planning. These players were aiming at engaging with the patients at a new and different level with the help of these platforms. Max Bupa – a leading insurance player offering Max Bupa GoActive Health Insurance Plan, tied up with GOQii, Practo and 1mg. Another player Practo – an online doctor portal had tied up with ICICI Lombard General Insurance to offer outpatient insurance products. The online pharmacy – Medlife was working on data use cases and is working on an outpatient insurance partnership. Such new avenues aimed at creating more data in addition to the existing data from the primary e-medicine, e-consultation and diagnostics businesses. This mushrooming data was said to pave way for the next big leap in the e-health industry.

## Results

**Evolution and growth of online pharmacies.** As per Anand et al. (2010), the first online pharmacy, established in the U. S. A. (United States of America), was soma.com in the year 1999. Following this, other online pharmacies were established across the globe, some of the prominent ones being drugstore.com and PlanetRx.com. Since online pharmacies were a new model for sale of medicines, they have been widely studied since 1999 till date across the world, especially in developed countries like the U. S. A. (United States of America) and the U. K. (United Kingdom). Traditional pharmacy chains started acquiring internet pharmacy startups or establishing their own divisions of online pharmacies.

**Classification of online pharmacies.** According to Fung et al. (2004) and Chaturvedi, Singh and Kumar (2011), there are mainly three categories of online pharmacies:

Type 1: The online pharmacy is a company run independently on the Internet without a

physical pharmacy store for a consumer to visit. Health plans may have such medical benefits arm which sometimes can cater to non-members.

Type 2: In the second type, the online pharmacy may be the online branch of a major pharmacy chain that has actual physical stores. These are known as 'clicks-and mortar' pharmacies. Several pharmacy chains have collaborated with online companies in this fashion. Customers can, therefore, request prescription refills through the website and pick up their deliveries from the physical store located near them.

Type 3: In the third type, a set of independent physical pharmacy stores form a network and build websites that represent themselves.

According to Personalised healthcare (2014), there is a shift in the way people are perceiving and using healthcare systems where the consumers now wield greater power and are more responsible for their healthcare purchases. In recent times, there has been a shift towards greater patient involvement in medical decision-making processes, and a lot of these decisions do not involve the doctor.

**Legality of online pharmacies.** As per Arrunada (2004), with the advent of online pharmacies, legality of their operations came into the picture. In the traditional method of sale of medicines, there is ample control by both the doctor and pharmacist. Online sale can easily escape this conventional system of regulation and the role of both the doctor and patient is eliminated. Patients can procure medicines directly, with or without doctor's consultation and or prescription. While a number of high-quality pharmacies operate legally with all regulations being followed, there are a lot of rogue pharmacies which operate illegally selling medicines without a prescription, selling unapproved, contaminated, false or expired drugs. These may prove to be a threat to public health at large by promoting drug abuse and self-medication.

**Merits and demerits of online pharmacies.** Since the launch of online pharmacies, their merits and demerits have been studied in detail and are more or less similar across geographies. Online pharmacies have often been perceived as a preferred option over the local/ physical pharmacies because of the benefits offered by them, thereby appealing to growing number of patients.

As per Fung et al. (2004) and Arrunada (2004), benefits of online pharmacies to the end consumers include:

- **Increased access and better availability** – Online pharmacies improve access of the general public to medicines at large and ensure better availability over brick and mortar pharmacies
- **Lower costs** – Medicines bought from online pharmacies are often available at lower costs than brick and mortar stores
- **Privacy and greater anonymity** – Patients may face embarrassment while seeking medications for certain medical conditions. This can be avoided by purchasing through online pharmacies
- **Better convenience** – Online pharmacies offer better convenience in terms of elimination of travel. Online pharmacies offer doorstep delivery. Some online pharmacies have electronic reminders for patients like travel, electronic reminders

According to the book Personalised healthcare (2014), some of the main reasons why people purchase medicines online are convenience, lower price, privacy and better convenience. The positives that result from buying medicines online are increased patient awareness and involvement in their healthcare decisions. People choose to buy medicines on the internet to save

cost and time. They may also avoid embarrassment over health conditions involving social stigma and situations where they feel embarrassed to talk to the doctor or pharmacist.

However, along with benefits many issues have come to light in the functioning of online pharmacies. While some online pharmacies operate in a legitimate manner, others may be involved in questionable practices. As per studies by Arrunada (2004) and Fung et al. (2004), disadvantages of purchasing medicines from online pharmacies include:

- Dispensing drugs without prescription (Arrunada, 2004; Fung et al., 2004): Many online pharmacies prescribe drugs without a valid prescription
- Use of online doctors or 'cyber doctors' prescription (Arrunada, 2004; Fung et al., 2004): Many online pharmacies use cyber doctors. This is especially true of pharmacies that do not ask for a valid doctor prescription and tend to conduct online consultations.
- Drugs from foreign countries prescription (Arrunada, 2004; Fung et al., 2004): Some drugs that are restricted for sale in a particular country can be available through online pharmacies located overseas.
- Risk of counterfeit drugs prescription (Arrunada, 2004; Fung et al. 2004): Quality of drugs available online is often questionable and there may be sale of counterfeit drugs
- Self – medication and adverse reactions (Arrunada, 2004): With online purchase of medicines, there is no doctor or pharmacist interaction. Patients with underlying medical conditions may self-medicate and this can lead to adverse reactions in patients. Problems like antibiotic resistance may also escalate with unsolicited use of online medicines.

As per Arrunada (2004), there are some immediate potential negatives associated with buying medicines online like – risk of counterfeit drugs, unapproved drugs, loss of security, self-medication, drug abuse etc. But there is also no way of reporting adverse drug reactions with the internet. There may be a decline in the quality of relationships between healthcare professionals and patients when health conditions are not being discussed. Overall, the advantages and disadvantages of buying medicines from online pharmacies apply equally to all the people purchasing for themselves as well as for others, including children, the elderly and other vulnerable groups.

**Feasibility of online pharmacies in the Indian scenario.** Online pharmacies are at a nascent stage in India. However, there is ample scope and opportunity for the growth of online pharmacies in India, owing to the unmet needs of Indians with respect to healthcare. The internet has a crucial role to play in making the healthcare services accessible to all with varied choices and affordable rates. To study the feasibility of online pharmacies in the Indian scenario, it is essential to take into account the state of the healthcare sector in India and the unique aspects of the Indian demography.

The opportunities for online pharmacies in India are as follows:

1. ***Lack of availability and access to medication:*** As per a study by Kotwani et al. (2007), World Health Organization (WHO), a third of the world population does not have reliable access to required medicines. This situation is even worse in developing countries, made even more complicated by the steadily increasing expenditure on medicines. According to Bhargava and Kalantri (2013), in fact, the access of essential drugs is also a problem with a major chunk of the world population. Most of the medicine costs are borne by patients in India as there is very low insurance penetration. Patients have limited funds that are often spent on overpriced medicines. This is because the pharmaceutical market in India is full

of ineffective, unnecessary medicines. Effective, necessary and cost-effective medications available are fewer in number. This is impacting both - the availability and the access, to essential medicines. Online pharmacies with their online presence can solve the problem of availability and access.

2. ***Out of pocket medical expenditure and lack of health insurance penetration.*** Developing countries have a lack of insurance penetration and less developed healthcare systems as compared to people in industrialized countries where healthcare costs can be covered by insurance or subsidies. According to Kotwani et al. (2007), in developing countries like India, over 80% cost of medicines is borne by patients. Price is an important determinant for medicine purchase. India is a leading producer of generic drugs. But the availability of medicines in the public sector is low. Therefore, patients have to opt for medicines from the private sector. According to studies by Smith, Bailey and Brynjolfsson (2000), online markets are said to operate more efficiently in terms of price updation, price level and elasticity of price. These markets experience greater price dispersion. As per Smith et al. (2000), this is because of the heterogeneity in the levels of trust and buyers' knowledge. According to Arrunada (2004), this applies to online pharmacies, which offer much lower prices as compared to 'brick and mortar' or physical pharmacy stores. In India, because of the out of pocket expenses on healthcare, any illness in the family may result in catastrophic effects on a family's financial well-being. As per Bhargava and Kalantri (2013), these direct expenses borne by the patient may result in one-fourth of all hospitalized patients and 2.2% of the entire healthcare user base, being pushed into poverty. In such cases online pharmacies, can help combat high medicine costs in addition to improving access.
3. ***Growing adoption of e-commerce in India.*** According to Kosgi (n.d.), India has a growing number of internet users and is one of the world's fastest growing e-commerce markets. Although the of adoption of e-commerce in India is low as compared to developed countries like the U. S. A. (United States of America), it is steadily growing. Most of it is travel dominated. The market is growing because of the following factors:
  - Lifestyle changes – Busy lifestyle, rise in working population especially women
  - Burgeoning middle class
  - Internet and mobile network penetration
  - Use of smart phones and internet enabled devices
  - Improved standard of living
  - Changed pattern and quality of consumption

In addition to these factors, in the year 2000, the implementation of the Information Technology Act (IT Act) has streamlined e-commerce laws and regulations for different sectors include healthcare and pharmaceuticals. The Competition Commission of India (CCI) regulates competition and trade-related practices in e-commerce fields in India.

4. ***Lack of compliance by offline pharmacies:*** According to Patel and Ashok (2016), while the brick and mortar pharmacies in the country are opposing online pharmacies on account of threat to their business, offline pharmacies have their share of loopholes too. It is being argued that offline pharmacies also do not adhere to the laws sometimes and sell drugs without checking the prescription, do not retain a copy of the prescription which is a mandatory requirement while selling certain drug classes. Many pharmacies run without the presence of a registered pharmacist in the premises or on a license leased by a registered pharmacist. It is extremely difficult to inspect these physical pharmacies. But,

with e-pharmacies, greater transparency can be brought in this process.

The challenges that can act as barriers for online pharmacies in India include:

1. **Legal barriers and deficient Indian laws:** According to Mani et al. (2017), online pharmacies have been present in the developed countries since long and have clearly defined rules and regulations. India does not have prescribed or clearly defined policies for regulation of online pharmacy market, unlike developed countries.

As per Alamelu, Amudha, Cresenta, Motha and Nalini (2016), in India, medicine sales are covered under the following laws and acts:

- The Drugs and Cosmetics Act, 1940
- The Drugs and Cosmetics Act, 1945
- The Indian Pharmacy Act, 1948
- The Information Technology Act, 2000

These laws are currently obsolete and inadequate to cover the nuances of online sale of medicines like legality of e-prescriptions, need for presence of a chemist, online pharmacy registration and accreditation etc. According to Mani et al. (2017), a number of laws including the ones governing ecommerce, pharmacies and online pharmacies, mobile health, telemedicine and cyberspace make regulation of online pharmacies in India difficult. Additionally, there is lack of laws similar to the Health Insurance Portability and Accountability Act of 1996 and Health Information Technology for Economic and Clinical Health Act of the US to govern medico and technological issues of ehealth. India does not have any data protection and privacy laws.

As per Alamelu et al. (2016), there is obviously a need to develop updated guidelines for the functioning of online pharmacies, which is a new model currently. For this, the FICCI (Federation of Indian Chambers of Commerce and Industry) has been appointed by Dr. G. N. Singh, the DCGI (Drugs Controller General (India)), as the nodal agency to draft these new guidelines. However, as per Chakraborty and Satsangi (2019), the online pharmaceutical market is still operating in a regulatory grey area. With over 150 leading e-pharmacy startups like Netmeds, Medlife, Myra, MChemist operating in the country today, India needs an effective regulatory mechanism to address the growing legal challenges.

2. **Opposition by brick and mortar pharmacies:** Online pharmacies are at a nascent stage in India. According to a study by Ayub and Mustafa (2017), with the increasing acceptance of e-commerce in India and the rise in healthcare spends, online pharmacies are expected to grow. Online pharmacies are posing a threat to their 'brick and mortar' counterparts. The All India Organization of Chemists and Druggists (AIOCD) had called for an All India strike three times in a row, twice in 2016 and once in 2017, to oppose the proliferation of online pharmacies. The brick and mortar pharmacies are strongly opposing the growth and spread of online pharmacies.
3. **Barriers to adoption of e-commerce in India:** According to the Internet and Mobile Association of India (2016), urban India is fast adopting e-commerce, online payments and transactions through the internet. Although the popularity of these services is growing, they are still very limited in spread and scope especially in rural India. It is also essential that the untapped non-users of the internet are converted and internet user base already existing is inducted into the various activities like online shopping and other services.

As per Kosgi (n. d.), the challenges faced by the e-commerce sector in India are:

- Low literacy rate, limited access to computers and education
- Lack of vocational education and training - training in English, online marketing concepts, marketing practices on the web
- Deficient laws regulating online pharmacies
- Consumer ignorance – lack of adoption of online
- Susceptibility to cybercrime due to lack on online security systems
- Illegal, fraudulent sites and online marketplaces

While India remains a nascent and promising market for online sale of goods and services. But, only improved credibility, awareness and education will orient consumers to positives of e-commerce. Intervention at the policy level, encouragement of online businesses and consumer education will ensure growth of e-pharmacies in India.

An ideal online pharmacy should ensure both consumer convenience and easy access to medicines. For example, an online pharmacy can benefit elderly people with chronic conditions living in nuclear family setups or people with limited resources could benefit from discounts and offers by online pharmacies.

As per report by Jaisani et al. (2015), technological advancements like applications (apps) should be able to bring price transparency, improve awareness, help patients find healthcare service provider, provide medicine reminders, and alerts to consumers. Other additional features to ensure traceability of medicine, authenticity tracking, prevention of abuse, addressing consumption of drugs without prescription, tax issues will make the model more robust and empower the consumer. Such a model can help increase entrepreneurship and in turn accelerate wealth creation in the country.

4. ***Stronghold of the traditional 'brick and mortar' pharmacy market:*** The Indian online pharmacy market can be divided into 2 parts: organized and unorganized retail. Organized retail pharmacies, like retail pharmacy chains and privately-owned large retail businesses, are licensed pharmacy retailers who operate legally with a valid sales tax and income tax registration. According to Ayub and Mustafa (2017), in 2016, organized retail pharmacies were growing at a rate of 25% and were expected to grow between 35-40% up to 2030. Unorganized retail businesses were the largest channel in the Indian market in 2016 contributing to about 84% of the overall sales and exhibited 13% growth. The growth rate of unorganized retail was less but has a high sale base which is 36% of the Indian pharmaceutical industry. Retail pharmacies – especially unorganized retail pharmacies have a stronghold in the Indian market. Consumers prefer the local pharmacy store, managed by a local owner and known pharmacists and support staff. Retail pharmacies are dispersed across the Indian geography and benefit the society by creating jobs, infrastructure and the community at large. As per Madan et al. (2019), e-pharmacies have the potential to enable this shift from the unorganized to organized sector and ensure greater access to medicines.

**Traditional role of the pharmacist and consumer mindset:** As per Basak and Sathyanarayana (2009), in many developing countries, private pharmacies are often the first source of healthcare for patients. The same is true for India as well. Private pharmacies are an inexpensive medical care solution.

According to Blenkinsopp, A. Paxton, and Blenkinsopp, J. (2005), people usually visit a pharmacy store for advice regarding minor illnesses and to get more information regarding symptoms experienced, about a particular medicine prescribed to them or for general health

related advice like consumption of dietary supplements. Pharmacists are expected to provide feedback based on their knowledge, skills and experience.

As per Ahmad, Atique, Balkrishnan, and Patel (2014), the role of the pharmacist has been evolving in India over the past few years and has now expanded from dispensing to a valuable provider of health information and improving compliance. Pharmacists can help reduce drug related problems, drug interactions and suggest cost-effective therapeutic solutions, thereby improving quality of life through counseling. The most benefited in this case are pediatric and geriatric patient populations, especially in areas where doctor is not available.

## Discussion

India with its high internet penetration and mobile usage has seen a surge in e-commerce in recent times with the leading categories being electronics, consumer goods, lifestyle products etc. Still, the pharmaceutical industry shows low penetration online. According to Madan et al. (2019), retail pharmacies are still the dominant channel accounting for 85% of pharmaceutical sales. However, most Indians face issues with access to quality medicines. The e-pharmacies face barriers like access, lack of local language support, privacy issues, trust and logistics. Lack of awareness is as much as important issue among doctors as it is among patients. An important aspect is educating healthcare professional themselves so that the knowledge and benefits can percolate down to the patients. A survey conducted by Rajagopal (2016), among mental health professionals revealed that doctors were not aware of the risks posed by online pharmacies. These doctors were not even aware if the purchase of medicines on the net is legal or not.

Yet, pharmacies are important establishments and a first point of access for healthcare. In recent times, technological innovations have given way to interesting business models in healthcare, of which online pharmacies are an interesting innovation. Internet can play a role in providing access to healthcare goods with ample choice and affordable rates. According to Jaisani et al. (2015), e-pharmacies can also play a role in educating and empowering the end-consumer about rational use of medicines and the importance of compliance. For a developing country like India, growing challenges include the changing lifestyle and growing burden of chronic diseases. The access of medicines is hampered in rural India with pharmacies having high density in the urban areas with moderate to low density in rural areas. With proper guidelines and a policy framework in place, this sector is bound to grow further and solve the problems of access and affordability across the country. With growing awareness and proliferation of e-commerce in the country, the time is right to introduce new guidelines and rules for the operation of online pharmacies in India.

As per Madan et al. (2019), despite the challenges faced, online pharmacies were worth US\$ 9.3 billion in 2019 and are estimated to grow and reach US\$ 18.1 billion by 2023. The market is growing at a CAGR of 18.1%. Online pharmacies are slowly gaining momentum in India and have tremendous growth potential, in the future too. Many existing e-commerce players are planning to expand their portfolio, by exploring multiple options like consolidation. Large e-commerce players may plan to get into the healthcare e-commerce space and might tie-up with companies who have technical know-how in the pharmacy space, often in the form of a brownfield expansion.

Investor interest in the online pharmacy space is likely to grow in the near future. Online pharmacies would also be interested in enhancing the user experience, so as to differentiate their platform from that of the competitors. Companies that offer end-to-end solutions to customers will most likely be successful. As a result, a lot of new service offerings may also emerge from these online e-commerce players, including electronic health record, online trade platforms and patient

management systems.

## Conclusion

Although the Indian online pharmacy market has its unique challenges based on the healthcare scenario and demography, there is tremendous scope for growth, too. The opportunities arise due to the growing need gaps like access and affordability in the growing Indian population with rising incidence of chronic illnesses. Online pharmacies can effectively address these need gaps. The challenges faced with respect to regulatory structures are being addressed by the government with the new draft guidelines in process. Online pharmacies once established in the urban counterparts can foray into the rural and remotest parts of the country where access is at its worst, thus improving the overall healthcare availability across the nation. The market today is relatively small but shows tremendous promise to grow and expand with the increasing awareness, demand and penetration. This is supported by the growing investor interest in this area which would further bolster the growth of this segment.

## References

- Ahmad, A., Atique, S., Balkrishnan, R., & Patel, I. (2014, August). Pharmacy profession in India: Current scenario and Recommendations. *Indian Journal of Pharmaceutical Education and Research*, 48(3),12-15.
- Alamelu, R., Amudha, R., Cresenta, L., Motha, S. & Nalini, R. (2016). Online pharma retail is a promising/unpromising avenue: An Indian context. *Asian Journal of Pharmaceutical and Clinical Research*, 9(2), 26-29.
- Anand, A., Sethi, N., Sharon, G., Mathew, G., Songara, R., & Kumar, P. (2010). Internet pharmacy: Need to be implemented in India. *Chronicles of Young Scientists*, 1(1), 16-25.
- Arrunada, B. (2004, April). Quality safeguards and regulation of online pharmacies. *Health Economics*, 13(4), 329-344.
- Ayub, M., & Mustafa, M. (2017). An overview of unorganized retail pharmacy in Indian pharmaceutical industry. *International Journal of Development Research*, 7(8), 14394-14401.
- Basak, S., & Sathyanarayana, D. (2009). Community Pharmacy Practice in India: Past, Present and Future. *Southern Med Review*, 2(1), 11-14.
- Bhargava, A., & Kalantri, S. P. (2013). The crisis in access to essential medicines in India: key issues which call for action. *Indian Journal of Medical Ethics*, 10(2), 86-95.
- Bhatia, T. (2017, January 21). A bitter pill for e-pharmacies. *Governance Now*. Retrieved from <http://www.governancenow.com/gov-next/egov/a-bitter-pill-epharmacies>
- Blenkinsopp, A., Paxton, P., & Blenkinsopp, J. (2005). *Symptoms in the Pharmacy - A Guide to the Management of Common Illness* (5 ed.). Victoria; Australia: Blackwell Publishing Ltd.
- Personalised healthcare*. (2014). Nuffield Bioethics. Retrieved from <https://www.nuffieldbioethics.org/wp-content/uploads/2014/07/Personalised-healthcare-Chapter-7-Online-purchasing-of-pharmaceuticals.pdf>
- Chakraborty, P., & Satsangi, A. (2019). Online Pharmacy in India: A study on Digital Marketing perspective. *International Journal of Research in Engineering, IT and Social Sciences*, 232-242. Retrieved from [https://www.researchgate.net/publication/331014216\\_Online\\_Pharmacy\\_in\\_India\\_A\\_study\\_on\\_Digital\\_Marketing\\_perspective](https://www.researchgate.net/publication/331014216_Online_Pharmacy_in_India_A_study_on_Digital_Marketing_perspective)
- Chaturvedi, A. K., Singh, U. K., & Kumar, A. (2011). Online pharmacy: an e-strategy for Medication. *International Journal of Pharmaceutical Frontier Research*, 1(1), 146-158.

- Khosla, V. & Dasgupta, B. (2018, January 22). Driven by Funding, online pharmacies step up hiring. *Economic Times*. Retrieved from [https://economictimes.indiatimes.com/articleshow/62609723.cms?utm\\_source=contentofinterest&utm\\_medium=text&utm\\_campaign=cppst](https://economictimes.indiatimes.com/articleshow/62609723.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst)
- Fung, C., Woo, H., & Asch, S. (2004). Controversies and Legal Issues of Prescribing and Dispensing Medications Using the Internet. *Mayo Clinic Proceedings*, 79(2), 188-194.
- George, C. (2006). Internet Pharmacies: Global threat requires a global approach to regulation. *Hertfordshire Law Journal*, 4(1), 12-25.
- Henney, J. E. (2001, Jan 31). Cyberpharmacies and the role of the US Food and Drug Administration. *Journal of Medical Internet Research*, 3(1), e3.
- Indian E-pharma with Muddled Regulatory Norms. (2016, June 23). *Business World*. Retrieved from <http://businessworld.in/article/Indian-E-pharma-Obstructed-With-Muddled-Regulatory-Norms/23-06-2016-99537/>
- Internet & Mobile Association of India. (2016). *Internet in India - 2016*. Retrieved from <http://bestmediainfo.com/wp-content/uploads/2017/03/Internet-in-India-2016.pdf>
- Jaisani, L., Pant, S., Shivam, K., Singh, J., & Suhasini, V. (2015). *E-Pharmacy in India – Last mile access to medicines*. The Federation of Indian Chambers of Commerce and Industry. Retrieved from [http://ficci.in/spdocument/20746/E-Pharmacy-in-India-Last-Mile-Access-to-Medicines\\_v5.pdf](http://ficci.in/spdocument/20746/E-Pharmacy-in-India-Last-Mile-Access-to-Medicines_v5.pdf)
- Kosgi, R. (n.d.). Growth and challenges in e-marketing in India. *Tactful Management Research Journal*. Retrieved from <http://oldtm.lbp.world/SeminarPdf/152.pdf>
- Kotwani, A., Ewen, M., Dey, D., Iyer, S., Lakshmi, P. K., Patel, A., Raman, K., Singhal, G. L., Thawani, V., Tripathi, S., Laing, R. (2007, May). Prices & availability of common medicines at six sites in India using a standard methodology. *Indian Journal of Medical Research*, 125, 645-654.
- Madan, A., Mehta, J., & Kumar, A. (2019). *E-pharma: delivering healthier outcomes*. Ernst & Young LLP. Retrieved from: <https://www.scribd.com/document/438948553/EY-e-pharma-delivering-healthier-outcomes-pdf>
- Mani, G., Danasekaran, R., & Annadurai, K. (2017). E-pharmacies in India: Empowerment or an emerging conundrum? *Journal of Pharmacy and Bioallied Sciences*, 16(1). Retrieved from <https://www.ojhas.org/issue61/2017-1-14.html>
- Orizio, G., Merla, A., Schulz, P., & Gelatti, U. (2011). Quality of Online Pharmacies and Websites Selling Prescription Drugs: A Systematic Review. *Journal of Medical Internet Research*, 13(3), e74. Retrieved from <https://pubmed.ncbi.nlm.nih.gov/21965220/>
- Parekh, P., Deepak, V., Kumar, K., & Choudhury, S. (2013). *Rebirth of e-Commerce in India*. Ernst & Young. Retrieved from [http://www.ey.com/Publication/vwLUAssets/Rebirth\\_of\\_e-Commerce\\_in\\_India/\\$FILE/EY\\_RE-BIRTH\\_OF\\_ECOMMERCE.pdf](http://www.ey.com/Publication/vwLUAssets/Rebirth_of_e-Commerce_in_India/$FILE/EY_RE-BIRTH_OF_ECOMMERCE.pdf)
- Patel, P., & Ashok, B. (2016). E-pharmacies Regulation in India: Bringing New Dimensions to Pharma Sector. *Pharmaceutical Regulatory Affairs*, 5(2), 175. Retrieved from: <https://www.hilarispublisher.com/open-access/epharmacies-regulation-in-india-bringing-new-dimensions-to-pharmasector-2167-7689-1000175.pdf>
- Rajagopal, M. K. (2016). Internet pharmacies – boon or threat? *Progress in Neurology and Psychiatry*, 20,4-5.
- Sah, R. K., Chandane, R. D., Suranagi, U., Manocha, S., Kapur, A. & Hotha, P. (2018). Awareness and behavioural outlook towards online pharmacy services among consumers in Delhi, India: A pilot survey. *European Journal of Pharmaceutical and Medical Research*, 5(3), 552-557.

- Singhi, A., & Bajaj, P. (2017). *Decoding Digital consumers in India*. The Boston Consulting Group. Retrieved from [http://image-src.bcg.com/Images/BCG-Decoding-Digital-Consumers-in-India-July-2017\\_tcm21-166292.pdf](http://image-src.bcg.com/Images/BCG-Decoding-Digital-Consumers-in-India-July-2017_tcm21-166292.pdf)
- Smith, M. D., Bailey, J., & Brynjolfsson, E. (2000). Understanding Digital Markets: Review and Assessment. In E. Brynjolfsson, & B. Kahin (Eds.), *Understanding the Digital Economy: Data, Tools, and Research* (pp. 276-288). Cambridge, MA: MIT Press.
- Thacker, T. (2017, October 17). Govt readies policy to regulate online pharmacies. *LiveMint*. Retrieved from <http://www.livemint.com/Companies/5XSg43thTB2q9NzoVmEaLL/Govt-readies-policy-to-regulate-online-pharmacies.html>
- Trivedi, A. (2017, January 31). Online pharmacies see muted investor interest over regulatory uncertainties. *LiveMint*. Retrieved from <https://www.livemint.com/Companies/nQDmJEG4BcKV4vR8FOEVLO/Online-pharmacies-see-muted-investor-interest-over-regulator.html>
- Vignesh, J. (2018, February 16). Big data to help online pharmacies stay in shape. *The Economic Times*. Retrieved from <https://economictimes.indiatimes.com/small-biz/startups/newsbuzz/big-data-will-help-online-pharmacies-stay-in-shape/articleshow/62940765.cms>
- 

### *Author's Profile*

**Shraddha Bandivadekar** is a Marketing Professional with a Master's Degree (M. B. A.) in healthcare management and M. Phil in Business Management and has worked in the area of healthcare marketing for over seven years. She is currently a research scholar pursuing her doctorate in management at the Shobhit University, Meerut. Shraddha's research interests lie in consumer behavior and emerging trends in digital marketing, especially in the healthcare space.

---