

# Future acceptance of Online Sale of Medical Products in Indian Market

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## Abstract

The research is an attempt to understand the future acceptance of online sales of medical products in the Indian market. There has been a boom in the digitization over the past few years. There have been huge aggregators in the market like Amazon, E-bay, Alibaba group, etc. who have got almost every offline product to online platforms. The new entrant in this field are the pharmaceutical products. The research paper tends to understand the preferences and attitude of the respondents to buy medical products from online platforms through a cross-sectional exploratory study with the help of a personally administered survey. A total of 272 respondents completed the survey. 87.86% of the respondents used internet for shopping purposes but only 52(19.11%) have used it more than once to buy medical products online. Respondents were also asked to respond to potential benefits and disadvantages of online medical purchases through a 5-point Likert scale. Correlation of demographic characteristics and internet usage behavior was also evaluated. The online platforms are likely to be accepted in the future because the quality of such online platforms is trusted. Since there are no regulations to check if the products being sold are counterfeit or not, the authenticity of the newly emerging e-pharma companies cannot be established. However, the convenience linked to the online purchases is likely to positively influence the buyers once the online selling regulations are met.

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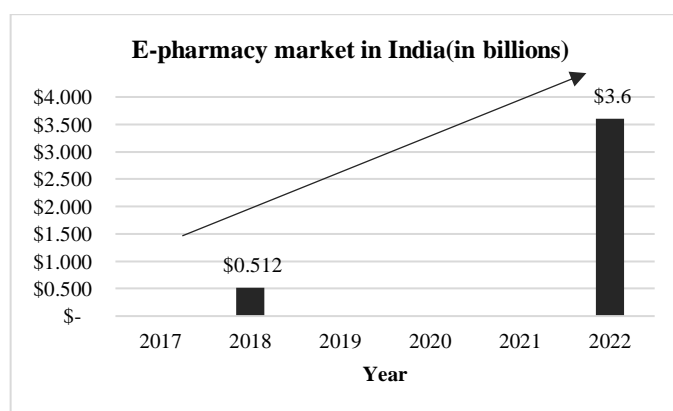
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## I. INTRODUCTION

E-Commerce has today one of the major industries in India, with global companies like Amazon and Flipkart desperately trying to gain share. Out of many kinds of online stores which are into different fields, one section remains unearthed which is supposed to have huge potential in the future, which is the E-pharmacy market.

E-pharmacies have gained attention especially from the Government authorities in the past few years. E-pharmacy potential is more than a billion-dollar in India. More than 25 start-ups have been working in this field in India. It is expected that the E-pharmacy market will grow up to \$3.6bn by 2022.



Source: Televisory's research(Boom in the online pharmacy market in India and the challenges ahead , 2019) [28]

India's 60% of the local therapeutic demand is being met by 850,000 pharmacy retail outlets. These outlets are responsible for 99% of the sales

in India while online platforms form only 1% of the total sales. [1]

As the internet penetration in India is increasing and thus the online platforms are gaining customers as the penetration moves to the deep rural areas as well. The e-pharma sector is also gaining pace slowly. Several entrepreneurs and investors are ready to invest in the E-pharma platforms and companies. Even the new laws regarding online pharmacy regulation has been impressive and the investors have also been very keen to invest on such platforms.

Also, there have been initiatives from the government side as well like Jan Aushadhi programmes, digital India, which will create platform for telemedicine, online healthcare services and also promote use of generic medicines, especially to rural parts of India. Other than these it would help in spreading awareness, increase access to immense market and help in tracking of the medicines for and counterfeit product and also help in tracking the patient. Since everything will be online it would mean that taxes are given to the government properly because data cannot be altered. And thus, even though E-pharmacy is in its initial days, its market is expected to cross US\$ 3 Billion mark by 2024. It is expected that the online pharmacy could account for 5-15% of the total pharmaceutical sales in India. [2]

## II. LITERATURE REVIEW

With the digitization of the world, people now feel that they are in a lesser need of the doctors and believe that they can take better control of their own health. There is a huge chunk of information available on online platforms like blogs, posts, etc and also on the apps and smart medical equipment for general public like Apple watch and Fitbit. People readily have access to these platforms. A survey done showed that 85% patients were confident about maintaining their health on their own [3]. The internet revolution has changed lives of the people around the world. The way people communicated has changed. The touchpoints have changed when it comes to engaging with each other. The thought process behind strategizing has changed because of changed user and customer behaviour [4]. With the infusion of the internet in our daily lives, the utility of seeking information

from the internet is also increasing. It is estimated that around 4.5% of the total searches on the internet are related to health directly or indirectly [5]. But it has been found that users today reach out to the online platforms not only to get information but to also buy health products and various services which are available on the internet which can also be used to diagnose one on their own [6,7].

As said by Fung et al[8], an online pharmacy can be defined as an internet based seller, which sells drugs and medicines and may operate as either as an online subsidiary of a "brick and mortar" pharmacy, or as a site representing business relations among pharmacies or can work an internet only site [9,10]. The growing of such markets has been due to the availability and rapid rise in the internet services. The online purchases have now become very smooth with easy mail-order trade and the advent of distance selling, which has ultimately led to the improvement in the customer experience during the online purchase [11,12]. Although the internet pharmacies can be accessed from anywhere in the world, the pharmaceutical industry is governed by many legislative and economic norms in every country. Therefore, unlike e-commerce, online pharmacies need to take all the perspectives into consideration. The delivery and the operational complexities must be understood and evaluated carefully [13]. Every country has their licensing protocols and quality maintenance standards when it comes to selling medicines on online platforms. But this is a problem when it comes to cross border selling as the countries are powerless beyond their borders [14] and the online websites are not willing to release their actual location to common public. This leads to uncertainty in the trust in the regulatory framework governing the cross-border business [13]. Also, a major safety risk linked to the patient safety on online platforms is the selling of counterfeit medicines. It is estimated that counterfeit medicines cover 10% of the market worldwide [15] and the penetration varies from less than 1% in the developed countries [16] to more than 30% when it comes to developing countries [17,18]. Even the global organisations like World Health Organisation (WHO) accept the risk caused by such medicines [19,20,21]. There is also a fear that internet might support this business of counterfeit medicines since authenticity over the

online platforms is not guaranteed [22]. The regulated drug supply is bypassed by the illegal online sellers and they focus on the unregulated selling of prescription drugs [23]. They lure the customers with the attractive discounts, convenience in buying, bulk order discounts, giving away extra medicines as gifts, speedy delivery, etc which is normally the case with every online selling store, but these illegal sellers hide the adverse effects of the medicines and the drug which they sell on their platforms.

Such platforms also sell products which look almost similar to the original product and there deceiving the customer. They have an unregulated environment. For e.g. they don't have restrictions on who is buying from their platform, if he/she is of legal age to buy that medicine. Or what quantity is being bought [15,18,24,25].

Although, when online buying of medicines was tested, the reports show that the practical application of this exercise is very limited and opportunities will be small [26]. But recently, it has been found that the use of e-pharmacies, and people using online health services have been increasing rapidly [27].

### III. RESEARCH METHODOLOGY

In an explorative study, an online survey was used. The online behavior and characteristics of the respondents were taken into consideration by asking for the

following independent variables: (1) age (2) education level, (3) gender, (4) general internet usage, (5) health status [Table 1]

The research survey questionnaire began with an introductory paragraph which explained the aim of the research, followed by the major sections: (1) demographics (2) Potential advantages and disadvantages of online medical shopping, (3) health status (4) use of online channels to gain knowledge about health (5) internet use. In the survey, multiple choice, multiple response questions along with 5-point Likert scale was used. SPSS was used to conduct the statistical analysis and the respondent's characteristics were described using descriptive analysis.

### IV. RESULTS AND DISCUSSIONS

The survey was executed online as well as offline and a total of 361 people were connected. Out of 361, the complete survey was filled by 272 respondents giving a response rate of 75.34%. The distribution of male (152/272, 55.88%) and female (120/272, 44.12%) respondents was comparable. The sample consisted of majorly the people who could be reached out through online platforms via online messaging platforms or social media, offline responses were also recorded. The major age group which was involved in this sample was from the age 21 to 28 (225/272, 82.72%). The education background of the respondents was also diverse, where respondents had completed schools (5.88%), colleges/graduation (41.18%) and post-graduation (52.94%). Around 89/272 (32.72%) respondents said their health status was average or below average when seen on a Likert-scale out of 5.

### V. RESPONSE TO BENEFITS AND DISADVANTAGES

Through the study done apart from this paper was used to funnel down twelve statements conforming to potential benefits and disadvantages (six each) of online medical products purchase platforms which were used to understand the factors which influenced it [Table 2]. The evaluation was done on a 5-point Likert Scale. A score of 1 was given for "Strongly disagree" and 5 was given for "Strongly agree". They were asked to express that up to what extent do they agree with the advantages and disadvantages mentioned in the questionnaire. The reliability of the answers was determined by calculating the Cronbach's alpha for advantages and disadvantages and the reliability values were found to be satisfying (advantages alpha— 0.790, disadvantages alpha 0.700) suggesting the reliability values are satisfying. ANOVA (Analysis of variance) was applied on the sample and it was found that the responses had significant differences. They believed convenience of buying while sitting at home and the availability of medicines online were the biggest benefits ( $F=52.04$ ,  $P<0.001$ ) [Table 4], while returning the medicine if found a defective product would be the biggest disadvantage ( $F=62.68$ ,  $P<0.001$ ) [Table 4]. However, bad quality of the online medical product was rejected to be a disadvantage (mean=2.52, SD=0.92) [Table 2], which shows that

the respondents trust the quality of online pharmacies. Linear regression analysis was applied on the responses to measure the predictive power of the responses that were received. The results showed that the responses for advantages and disadvantages have been significant to predict the online medical product buying behaviour of the respondents in the future ( $F=14.30$ ,  $P< 0.001$ ,  $R^2=0.39$ ). [Table 5]

## VI. ONLINE PURCHASE BEHAVIOR

The study was not able to relate the online buying to certain attributes because there were less respondents who had a prior experience of buying medicine online. However, the responses also inquired if the respondents were likely to buy from online sources in the future. This response was linked to various other questions that were asked along. ANOVA (analysis of variance) was executed on the age group responses for future buying behaviour and it was found that there was significant variation among different age groups in willingness to buy medical products online in the future [Table 7]. However, a Correlation analysis was executed on the data and it showed that significant correlation existed between age (Correlation coefficient= 0.261), education background (Correlation coefficient=0.453) with the willingness to buy online medicines in the future. A significant correlation was also found between use of internet to gain information about health (Correlation coefficient= 0.248). Correlation was also found between people who use internet for general shopping and people who shop for medical products online (Correlation coefficient=0.224) and between people doing online shopping and future probability of buying online medical products (Correlation coefficient=0.363) [Table 3]

The educational background also showed that people who are right now well versed with technology are likely/very likely to buy online. While only 25% of school going respondents would likely use online platforms in future to buy medical products, in the college/graduation (52.6%) and post-graduation (50.7%) the number is higher.

A linear regression analysis was executed on the purchase behaviour data to understand the correlating factors and the online purchase of medicines. It was found that age, gender, past

purchase history for online product (medical or non-medical) and habit of searching online for the health problems, all these attributes could help in predicting the future buying behaviour ( $F=23.92$ ,  $P< 0.001$ ,  $R^2= 0.421$ ) [Table 6].

It was also found that out of the respondents who were likely to buy medicines from online platforms in the future, 88.2% were from the age group 21-28 years. 86.8% of the respondents who were post-graduate and 86.7% who were graduate did not deny to use online medical platforms in the future. This shows that the young generation who is technologically advanced and has had online shopping experience for other products is likely to switch to online platforms for medical products as well.

## VII. LIMITATIONS

This study does have some limitations. The use of online pharmacy was reported by the respondents itself and not audited. This can be untruthful reporting and may be subjected to questioning. Also, there might be other advantages and disadvantages which one considers while buying online medical products which have not been covered in this research paper. The age group chosen for the research was between 16 years to 34 years only. This may underestimate the actual prevalence. There might be influence of age groups other than these on the buying behavior of online medicines. There might be other factors which influence the consumer in buying online medical product which might have been missed out. Also, the sample size is smaller compared to the whole Indian market and thus cannot be claimed for the whole population.

## VIII. CONCLUSION

The research done suggests that much of the respondents did not have much of the experience in buying medical products online. 87.86% of the respondents said they have used internet for their purchases in the past and out of them 45.18% respondents had never used online platforms to buy medical products. This number will definitely increase in the future as 81.27% of the respondents have not rejected the likelihood to buy medicines online in the future.



The perceived benefits promote the online buying behaviour of the respondents. The respondents trusted the quality which was provided by online but are scared of the counterfeit products which can be sold on such platforms. Therefore, we can say that if strict regulatory measures are taken for e-

pharmacies, we can expect people to switch to online platforms. My statement is also strengthened by the fact that the perceived disadvantages by the respondents also associate to almost every other online shopping platform, but still there are unicorn companies operating in the online market segment.

#### Tables:

**Table 1 Respondent demographic and internet shopping and health characteristics (N=272)**

		Value
Gender, n (%)		
	Male	152(55.88%)
	Female	120(44.12%)
Education, n (%)		
	Schooling	16(5.88%)
	Graduated	112(41.18%)
	Post-graduate	144(52.94%)
Age group, n (%)		
	16-20	39(14.34%)
	21-24	134(49.26%)
	25-28	91(33.46%)
	28-34	8(2.94%)
Frequency of shopping online		
	Regularly	176
	A few times	63
	Never	33
Health status in past one year		
	Very good	28
	Good	155
	Normal	69
	Bad	12
	Very bad	8

**Table 2: Mean and Standard deviation of potential advantages and disadvantages of online medical shopping (N=272)**

Parameters		Evaluation, mean (SD)
Potential advantages	Convenience	4.04 (0.94)
	Inexpensive	3.42 (0.87)
	People who can't get to a pharmacy can also purchase products	3.98 (1.01)
	I can purchase medicines at any time of the day	3.96 (1.09)
	I can buy medical products which are otherwise not available in nearby offline pharmacies	4.08 (0.89)

	I can get products better in quality when compared to the offline pharmacies	3.04 (0.99)
Potential Disadvantages	<p>Due to the delivery time, I'm getting the drug later compared to an offline pharmacy</p> <p>The source of the product is not reliable</p> <p>I might receive counterfeit medicine</p> <p>Returning the medicine will be a hassle</p> <p>I do not get proper information regarding the use of the products</p> <p>The quality of the product is lower compared than in local pharmacies</p>	<p>3.66 (1.01)</p> <p>3.37 (0.95)</p> <p>3.59 (0.90)</p> <p>3.72 (1.03)</p> <p>3.01 (0.98)</p> <p>2.52 (0.92)</p>

**Table 3 Results of correlation analysis between demographic data, general internet purchase behavior and future online medicine purchase attitude (N=272)**

Parameter	Prospective online medicine purchase attitude
Age	0.26
Education	0.06
People who have purchased medical products through online platforms in the past	0.45
People who get information regarding their health condition through internet	0.24
People who use internet for shopping	0.36

**Table 4 The results of ANOVA (Analysis of Variance) for Advantages and Disadvantages**

Source of Variance	SS	Df	MS	F	P-value	F-critical
<b>Advantages</b>						
Between groups	247.2825	5	49.4565	52.04453	3.48E-50	2.219601
Within groups	1545.143	1626	0.950273			
Total	1792.426	1631				
<b>Disadvantages</b>						
Between Groups	295.4026	5	59.08051	62.68315	6.67E-60	2.219601
Within Groups	1532.548	1626	0.942526			
Total	1827.95	1631				

**Table 5 Results for Linear Regression run on Advantages and Disadvantages vs Future buying behavior**

<i>Regression Statistics</i>	
Multiple R	0.631406
R Square	0.398673
Adjusted R Square	0.370812
Standard Error	0.908759
Observations	272

#### **ANOVA (Analysis of Variance)**

Source of Variance	SS	df	MS	F	Significance F
Regression	12	141.8089	11.81741	14.30951	9.02E-23
Residual	259	213.8933	0.825843		
Total	271	355.7022			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	2.05957	0.402916	5.111667	6.21E-07
Convenience	0.545587	0.08418	6.481168	4.57E-10
Inexpensive	0.16743	0.074221	2.255827	0.024916
Reach even for those who can't get to a pharmacy	-0.28142	0.0791	-3.55779	0.000445
Can buy any time of the day	0.018739	0.070863	0.264437	0.791654
Availability of products online when not available offline	0.227826	0.098454	2.314025	0.021449
Quality of products available on online	0.219034	0.067788	3.231177	0.001392

platform				
Hassle of returning if wrong product received	-0.21657	0.061913	-3.49798	0.000552
Wrong information on the internet platform	0.127267	0.076234	1.669425	0.096241
Not reliable source of the product when online	-0.07503	0.09077	-0.82656	0.409247
Delivery time slower than offline	0.070599	0.072692	0.971208	0.332351
Quality of the products on the platform is low	-0.33882	0.07775	-4.35783	1.9E-05
One might receive counterfeit products	-0.19693	0.079873	-2.46556	0.014329

**Table 6: Results of linear regression for Demographic data, past purchase behavior and future buying behavior**

<i>Regression Statistics</i>	
Multiple R	0.648973
R Square	0.421166
Adjusted R Square	0.403559
Standard Error	0.884794
Observations	272

#### ANOVA (Analysis of Variance)

Source of Variance	SS	df	MS	F	Significance F
Regression	8	149.8097	18.72622	23.92023	1.82E-27
Residual	263	205.8925	0.782861		
Total	271	355.7022			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	1.252928	0.457722	2.737314	0.006617
Age	0.178278	0.08481	2.102075	0.036498
Gender	-0.57777	0.116305	-4.96775	1.22E-06
Edu	0.056171	0.105606	0.531892	0.59525
Internet past purchase	0.225241	0.056247	4.004519	8.09E-05
Medical past purchase	0.581165	0.064195	9.053175	3.21E-17
Health Status	-0.03694	0.069512	-0.53136	0.595615
Information from internet about health	0.288937	0.049989	5.780012	2.11E-08
Self-Medication	-0.01873	0.052042	-0.35994	0.719181



**Table 7 The results of ANOVA (Analysis of Variance) for Age vs future buying behavior**

Source of Variance	SS	Df	MS	F	P-value	F-critical
Between groups	25.81297	3	8.604324	6.9901	0.000152	2.638286
Within groups	329.8892	268	1.23093			
Total	355.7022	271				

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