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Factors Determining the Customers' Intention to Purchase OTC Products through E-Pharmacies

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Abstract

In the health care system, over-the-counter (non-prescribed) drugs play a crucial role in the medication process. Over-the-counter (OTC) drugs are medicinal products sold without a doctor's prescription. Without seeking care from health professionals, OTC medications are safe and effective for the general public usage. Generally, OTCs and self-medication are used to treat mild health issues in a simpler and inexpensive way. Cold-and-cough medicines, vitamins, analgesics, digestive medicine (i.e., anti-acids), and dermatological medicines are the categories that dominate the world's top five OTC market-share. Limited studies in India aimed at evaluating OTC purchasing behaviour in e-pharmacies. Therefore, this study aimed to identify influential E-pharmacy factors that are affecting consumers during OTC products purchase. This study also examined the consumers' intention to purchase OTC products across major cities of Tamil Nadu. A total of 153 responses were collected from e-pharmacy customers through self-administered questionnaires across 4 major cities of Tamil Nadu. E-pharmacy customers who made at least one purchase on the e-pharmacy website were considered for the study. Based on the results, analgesic drugs are the most preferred OTC category in the online purchase mode. The results also demonstrated that post-purchase behaviour aspects like on-time delivery of the product and providing the shift response to solve the queries raised by the e-pharmacy customers play a significant role in enhancing customer satisfaction across e-pharmacy sites.

Keywords

OTC products, E-pharmacy, Customer, Generic drugs, Purchase Intention

Introduction

The pharmaceutical industry is broadly categorized into prescription drugs (RX) and over-the-counter (OTC) products. According to Guido et al. (2011), OTC drugs are "medicinal products which are considered safe enough to be self-administered by patients when utilized for a period within the expiration date of the patent". The World Health Organization estimates that India accounts for 21% of the global disease burden. Consequently, India loses over 6% of its GDP annually due to health-related issues. In 2019, India's OTC medicine market was valued at USD 6.38 billion, with a projected growth rate of 19.4%, expected to reach USD 15.48 billion by 2024. India currently ranks as the 11th largest OTC drug market globally (Marketdata Forecast, n.d.). OTC medications are accessible in various outlets, including convenience stores, grocery stores, pharmacies, and discount retailers, without a prescription.

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Approximately 70% of India's pharmaceutical market revenue is dominated by branded generic drugs. Patented drugs account for 21% of the market share, while OTC drugs contribute 9% of the total USD 20 billion revenue (Umesh Chandra, 2016). Ventola (2013) explains that OTC drugs can be marketed directly to consumers, unlike prescription drugs that require a valid prescription from a healthcare professional. While self-medication practices can carry risks, OTC drugs offer benefits such as time and cost savings and are commonly used for minor ailments like headaches, fevers, and colds (Chaturvedi, 2009). The increasing use of mobile devices has improved access to mobile health information systems, significantly influencing behavioral intentions to use such systems (Ahmed et al., 2014). Health information technology holds immense potential for enhancing quality, safety, and cost-effectiveness in healthcare, although barriers remain in developing countries (Park et al., 2013).

Social media usage by enterprises has significantly impacted consumer behavior by enhancing brand engagement and awareness (Toney et al., 2015). In recent years, more than 250 online pharmacies have emerged in India. Frost & Sullivan forecast a compound annual growth rate (CAGR) of 63% in India, with the market expected to grow from USD 512 million to USD 3.6 billion by 2022.

Over-the-Counter (OTC) Products

OTC medications offer several advantages, including fewer doctor visits, reduced absenteeism from work, and lower treatment costs compared to prescription drugs (Greene & Hertzberg, 2010). The growth of OTC and self-medication is seen as a cost-effective approach to managing mild health conditions. Globally, the most common OTC categories include cold and cough remedies, vitamins, analgesics, antacids, and dermatological products. Drivers for OTC drug purchases have traditionally included previous prescriptions for similar symptoms and pharmacists' recommendations (Anurasinghe et al., 2017).

According to Bennadi (2013), the development of comprehensive OTC and prescription drug distribution systems must prioritize patient health needs over product marketing. Srivastava et al. (2017) observed that younger consumers are more likely to purchase OTC products than older individuals, and their product preferences differ by age. For instance, baby care and child nutrition products are targeted toward younger demographics, whereas geriatric products cater to older adults.

Medical professionals generally consider OTC medications safe and effective when used appropriately. Marathe et al. (2020) emphasize that OTC use helps reduce healthcare costs, physician consultation fees, and transportation expenses. Many individuals now practice self-medication with OTC drugs for minor ailments to avoid such costs (Bennadi, 2013). The rising awareness of health and expanding OTC product penetration in rural India are driving rapid growth in the sector. Establishing trust and fostering customer comfort are essential to ensuring brand loyalty in the OTC market (Supriya, 2013).

E-Pharmacies

As e-commerce expands, the volume of transactions and the flow of information between companies and consumers have increased significantly. E-commerce has enabled pharmaceutical companies to operate more efficiently and maintain a competitive edge (Kanungo, 2004). Online pharmacies are businesses that sell and deliver medications—

including prescription-only products—via the internet or mail (Makinen et al., 2005). The first online pharmacies emerged in the United States in the late 1990s, offering both prescription and non-prescription drugs (Orizio et al., 2011).

However, medicines differ from ordinary commodities due to safety and efficacy concerns (Priyanka et al., 2016). E-pharmacy models in India can be broadly categorized based on inventory control and distribution strategies (Mackey et al., 2016). There are three primary e-pharmacy models:

1. Mail-order pharmacies that dispense medications upon receipt of valid prescriptions.
2. Online consultation platforms where patients submit health forms for evaluation by remote doctors.
3. Prescription-free models that allow the sale of OTC medications directly.

Major e-pharmacy players in India include Medlife, 1Mg, Netmeds, Myra, CareOnGo, and PharmEasy. As the sector matures, smaller firms are being consolidated into larger entities—PharmEasy and Medlife together hold 60–70% of the Indian market. The digital transformation has intensified competition, compelling pharmacies to innovate and differentiate to win customer trust. Some pharmaceutical firms aim to become national brands by expanding their reach, while others focus on local engagement. According to Krishnadas (2021), marketing managers must adopt strategic approaches to enhance consumer understanding and perceived value across digital platforms.

Materials and Methods

Conceptual Model

Consumer decisions to purchase OTC products through e-pharmacies are influenced by demographic variables such as age, gender, education, income, occupation, and socioeconomic status. This study investigates consumer awareness, attitudes, behaviors, and the key factors influencing their intention to purchase OTC drugs via e-pharmacies in Tamil Nadu. Few studies in India have examined consumer behavior in the context of OTC purchasing through online pharmacies.

Data Collection

This study was conducted between January and May 2021 across four major cities in Tamil Nadu: Chennai, Coimbatore, Madurai, and Trichy. Using stratified random sampling, 200 participants were selected based on their willingness to participate. A structured questionnaire was developed based on the existing literature, and its content validity was reviewed by subject matter experts. Fifty questionnaires were distributed in each city. Out of the 200 questionnaires, 163 were returned, yielding a response rate of 81.5%.

After data cleaning, 157 questionnaires remained, of which 153 were deemed valid for final analysis. Descriptive statistical analysis was used to assess the feasibility and acceptance of the intervention. A 5% significance level was applied, and IBM SPSS version 19 was used for statistical analysis.

Objectives

i. To explore the factors that predict the intention to use OTC products through e-pharmacies.

ii. To study the sociodemographic characteristics (age, gender, marital status, education, income) of drug consumers that affect their intention to purchase OTC products through e-pharmacies.

Data Analysis

Demographic and Socio-Economic Profile of Consumers

Table 1 presents the demographic and socio-economic characteristics of consumers purchasing OTC products through e-pharmacies. The analysis indicates that 54% of the consumers were male, while 46% were female. Regarding family composition, 39% of respondents reported having four family members, followed by 28% with three members, 14% with five members, 12% with two members, and 7% with more than five members.

In terms of annual income, 33% of consumers reported earning more than ₹4 lakhs, while 28% earned between ₹1 to ₹2 lakhs. Additionally, 24% had an annual income between ₹2 to ₹4 lakhs, and 15% earned less than ₹1 lakh. With respect to educational attainment, 51% of the respondents were graduates, whereas the remaining 49% held qualifications below a bachelor's degree.

Age-wise distribution reveals that the largest proportion of customers (35%) fell within the 45–54 age group, followed by 26% in the 35–44 age bracket. Consumers aged 26–35 years accounted for 17% of the sample, 18–25 years for 12%, and those above 55 years represented 10% of the respondents.

Spending patterns on OTC products through e-pharmacies show that 35% of consumers spent between ₹3001–5000 per year, followed by 26% spending ₹1000–3000, 19% spending ₹5001–10000, 11% spending more than ₹10000, and 9% spending less than ₹1000 annually. Regarding purchase frequency, 32% of the respondents made 6–9 purchases per year, 26% made more than 9 purchases, another 26% made 3–6 purchases, while only 16% made fewer than 3 purchases annually.

In terms of payment methods, 42% of the consumers preferred using debit or credit cards, 26% used internet banking, 23% opted for cash on delivery, and 9% used other modes such as EMI or digital wallets. When asked about their preferred e-pharmacy platforms, 39% of the respondents favored Medlife. This was followed by 23% who chose other platforms such as Apollo and Medplus, 16% who preferred PharmEasy, 13% who selected Netmeds, and 9% who used 1mg.

Table 1. Demographic and socio-economic profile of consumers

	Demographics	Frequency	Percentage (%)
Gender			
1.	Male	83	54
2.	Female	70	46
No of Members in Family			
1.	Two members	19	12
2.	Three members	42	28
3.	Four members	60	39
4.	Five members	22	14

5.	More than Five members	10	7
Annual income of customers			
1.	<Rs 1 lakh	23	15
2.	One lakh to Two lakhs	43	28
3.	Two lakhs to Four lakhs	37	24
4.	>Four Lakhs	50	33
Education level of customers			
1.	High school or below	75	49
2.	Graduate	78	51
Age of customers			
1.	18–25 years	18	12
2.	26–35 years	26	17
3.	35–45 years	40	26
4.	45–55 years	53	35
5.	>55 years	16	10
Money spent on purchasing OTC products in E-pharmacies in a Year in RS			
1.	Less Than 1000	13	9
2.	1000 - 3000	40	26
3.	3001 - 5000	53	35
4.	5001 - 10000	30	19
5.	Above 10000	17	11
Frequency of purchase in a year			
1.	1ess than 3	25	16
2.	3-6	40	26
3.	6-9	48	32
4.	More Than 9	40	26
Prefered Payment Mode			
1.	Cash on Delivery	35	23
2.	Credit/Debit Cards	65	42
3.	Internet Banking	40	26
4.	Others	13	9
E- Pharmacy Site Preferred			
1.	Netmeds	20	13
2.	Pharmeasy	25	16
3.	1 mg	13	9
4.	Medlife	60	39
5.	Others	35	23

Reliability Analysis

Table 2 presents the reliability scores for the scale measuring consumer opinion on purchase intention via e-pharmacy platforms. The Cronbach's alpha value was .816 for 37 items, indicating a high level of internal consistency, and thus, the instrument used was deemed reliable for further analysis.

Table 2. Reliability scores

Cronbach's Alpha	N of Items

.816	37

Hypothesis Testing Using ANOVA

The following null hypothesis was tested:

H_0 (Null Hypothesis): There is no significant relationship between the features of e-pharmacy websites and customer intention to purchase OTC products.

Table 3 presents the results of the ANOVA analysis. The null hypothesis was rejected for several factors. For Reliability, the F-value was 6.896 with a significance level (p-value) of .000, indicating a significant relationship with customer intention. Similarly, Web Accessibility yielded an F-value of 8.830 and a p-value of .000, confirming a significant relationship. Ease of Use also demonstrated significance with an F-value of 4.966 and a p-value of .003.

Conversely, Attentiveness had an F-value of 4.233 and a p-value of .607, which led to the acceptance of the null hypothesis, indicating no significant relationship. Security had an F-value of 3.666 and a p-value of .014, indicating a significant association with customer intention. Finally, Credibility yielded an F-value of 3.186 and a p-value of .076, suggesting that the null hypothesis should be accepted, and no significant relationship exists.

These findings suggest that website features such as reliability, web accessibility, ease of use, and security significantly influence customer intention to purchase OTC products via e-pharmacies. However, attentiveness and credibility do not show a statistically significant influence.

Table 3. ANOVA for independent variables of E-pharmacy website features and Customer intention towards purchasing OTC Products

E-pharmacy website features and user experience	F	Significance	Result
Reliability	6.896	0.000	Reject H_0
Web accessibility	8.830	0.000	Reject H_0
Ease of use	4.966	0.003	Reject H_0
Attentiveness	4.233	0.607	Accept H_0
Security	3.666	0.014	Reject H_0
Credibility	3.186	0.076	Accept H_0

Correlation Analysis

Table 4 shows the correlation between various e-pharmacy website features and customer intention. The results indicate that Reliability ($r = .277$, $p = .001$), Web Accessibility ($r = .149$, $p = .000$), and Ease of Use ($r = .026$, $p = .092$) have positive correlations with purchase intention, though the strength varies. In contrast, Attentiveness ($r = –.043$, $p = .604$) and Credibility ($r = –.045$, $p = .026$) exhibit negative correlations, indicating that these features may deter customer intention if not properly addressed.

Table 4. Correlation analysis for factors of E-pharmacy website features and Customer intention towards purchasing OTC Products

Factors	R	Sig	Result
Reliability	0.277**	0.001	Positive
Web accessibility	0.149**	0.000	Positive
Ease of use	0.026*	0.092	Positive
Attentiveness	-0.043	0.604	Negative
Security	0.068	0.407	Positive
Credibility	-0.045	0.026	Negative

Regression Analysis

As shown in Table 5, the regression model yielded an R-value of .517, R^2 of .267, and an adjusted R^2 of .236. The standard error of the estimate was .85722. The F-value of 3.85722 with a p-value of .000 confirms that the overall model is statistically significant. This implies that the independent variables—Reliability, Web Accessibility, Ease of Use, Attentiveness, Security, and Credibility—collectively explain a significant portion of the variance in customer intention toward purchasing OTC products through e-pharmacy platforms.

Table 5. Regression Analysis

Model	R	R Square	Adjusted R Square	Std. error of the estimate	F	Sig.
1	.517[a]	.267	.236	.85722	3.85722	0.000

Predictors: (constant), namely Reliability, Web accessibility, Ease of use, Attentiveness, Security, and Credibility

Table 6 presents the regression analysis for the relationship between e-pharmacy website features and consumer intention to purchase OTC products. The model yielded an R-value of 0.517, indicating a moderate positive correlation between the independent variables (website features) and the dependent variable (consumer intention). The R^2 value of 0.267 suggests that approximately 26.7% of the variance in consumer purchase intention is explained by the combined effect of the website features considered in the model.

The standardized Beta coefficients show that Web Accessibility ($\beta = -0.300$, $p = .025$), Ease of Use ($\beta = -0.313$, $p = .005$), Security ($\beta = 0.450$, $p < .001$), and Credibility ($\beta = 0.225$, $p = .004$) are statistically significant predictors of consumer intention. In contrast, Reliability ($\beta = 0.105$, $p = .341$) and Attentiveness ($\beta = 0.059$, $p = .216$) were not statistically significant and therefore require further enhancement to positively influence customer engagement.

Based on the regression output, the following model was formulated:

Consumer Intention = 0.105(Reliability) – 0.300(Web Accessibility) – 0.313(Ease of Use) + 0.059(Attentiveness) + 0.450(Security) + 0.225(Credibility)

This equation highlights the importance of strengthening security and credibility features in e-pharmacy platforms, while also addressing ease of use and accessibility concerns to boost consumer intention.

Table 6. Regression analysis for factors of E-pharmacy website features and Customer intention towards purchasing OTC Products

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.116	0.537		3.944	0.003
	Reliability	0.180	0.019	0.105	0.154	0.341
	Web accessibility	-0.023	0.087	-0.300**	-0.075	0.025
	Ease of use	-0.057	0.069	-0.313**	-2.278	0.005
	Attentiveness	.143	0.075	0.059	2.115	0.216
	security	0.0214	0.081	0.450**	1.975	0.000
	credibility	0.044	0.049	0.225**	2.683	0.004
a. Dependent Variable: consumer intention to purchase in E-pharmacy						

Table 7 provides descriptive statistics on consumer perceptions regarding online service quality features in e-pharmacies. Among the various indicators, the highest mean score (M = 4.40) was recorded for the statement "Easy to understand the contents of the pharmacy website," followed by "Online retailer's information is displayed on the website" (M = 4.39). These results suggest a strong consumer preference for clarity and transparency in online interfaces.

In contrast, the lowest mean score (M = 3.63) was associated with the statement "The product/service ordered was delivered on time," indicating potential dissatisfaction with delivery punctuality. Another relatively lower-rated feature was "On-time response about query" (M = 3.69), suggesting the need for improvement in customer service responsiveness.

Table 7. Online Service quality features in e-pharmacies

Construct	Online Service Quality features in E-pharmacy sites	Mean	S.D.
Online Service Quality features in e-pharmacy sites			
Reliability			
R1 I received all the products from the online pharmacy which I have ordered.		3.70	1.003
R2. The product/service ordered was delivered on-time		3.63	0.623
R3 The billing process was accurate		3.84	0.681
R4 The online pharmacy website responded positively to the queries raised		3.83	0.928
R5 On-time response about query		3.69	0.955
R6 Information retrieval is easy		3.89	0.748
Web accessibility			

A1. Contact information, customer care number is easily available	3.98	0.863
A2. Easy to connect the customer care person	4.01	0.843
A3 Multiple ordering options are available	4.00	0.921
A4 Chat rooms, bulletins are available	3.90	0.825
Ease of use		
E1 Website is easy to navigate	3.71	0.748
E2 Catalogues are well organized	3.93	0.814
E3 Payment, warranty, and return policies are easy to read/understand.	3.92	0.801
E4 Easy to understand the contents of the pharmacy website	4.40	0.728
Attentiveness		
AT1 Personalized experience provided by the e-pharmacy	4.10	0.817
AT2 Place for consumer questions and comments	3.95	0.842
AT3 I received a personal note from the e-tailer ex: thank you	3.94	0.789
Security		
S1 Secured in providing personal information for online purchase	3.97	0.645
S2 Secured Internet transaction process	3.79	0.882
Credibility		
C1 Online retailer's information is displayed on the website	4.39	0.66
C2 Received special rewards and discounts as promised	4.21	0.693

Table 8 summarizes the types of OTC products most frequently purchased from e-pharmacy platforms. Analgesics represented the highest share at 30% of total purchases. This was followed by vitamins and supplements (23%), personal hygiene products (15%), and cough syrups or cold tablets (14%). Digestives and enzymes accounted for 11%, while 7% fell into the 'others' category.

These findings suggest that consumers primarily turn to e-pharmacies for common health management items and dietary supplements. The demand distribution reflects both preventive health behaviors and the convenience offered by digital pharmaceutical platforms.

Table 8. Types of products purchased in E-pharmacy sites

Types Of Products	Frequency	Percent
Analgesics	68	30
Personal Hygiene products	35	15
Digestives and enzymes	25	11
Cough syrups and cold tablets	32	14
Vitamins/Supplements	53	23

Others	17	7
Total	230	100

Discussion

The analysis reveals that the null hypothesis is accepted for Attentiveness and Credibility, while it is rejected for e-pharmacy website quality factors such as Reliability, Web Accessibility, Ease of Use, and Security in relation to consumer intention to purchase over-the-counter (OTC) products. The correlation is positive for Reliability, Web Accessibility, Ease of Use, and Security, as indicated by positive R-values. In contrast, Attentiveness and Credibility exhibit negative correlations, suggesting that these areas require attention and improvement to enhance consumer intention.

The regression analysis highlights that Web Accessibility ($\beta = 0.300$), Ease of Use ($\beta = 0.313$), Security ($\beta = 0.450$), and Credibility ($\beta = 0.225$) are significant predictors of consumer intention to purchase OTC products via e-pharmacies. Conversely, Reliability and Attentiveness are not significant and should be targeted for improvement to increase their influence. Descriptive statistics show that e-tailers rated "Easy to understand the contents of the website" the highest (mean = 4.40), followed closely by "Online retailer's information displayed on the site" (mean = 4.39). The lowest-rated items were "On-time response to queries" (mean = 3.69) and "On-time delivery of the product" (mean = 3.63).

Regarding product categories, Analgesics accounted for 30% of total purchases, followed by Vitamins/Supplements at 23%. Personal Hygiene Products made up 15%, Cough Syrups and Cold Tablets 14%, and Digestives and Enzymes 11%, with the remaining 7% categorized as 'Others'. In terms of brand preference, 39% of customers favored Medlife, followed by 23% in the 'Others' category (e.g., Apollo, MedPlus). Pharmeasy was preferred by 16%, Netmeds by 13%, and 1mg by 9%.

Conclusions

E-pharmacies must ensure timely delivery of products, as delays negatively impact both customer satisfaction and the perception of the platform. Strengthening delivery logistics and monitoring the performance of delivery partners are crucial strategies to enhance customer trust and support the industry's growth.

This study is not without limitations. Firstly, it focuses exclusively on over-the-counter (OTC) products and does not account for variations in consumer behavior across different product categories available on e-pharmacy websites. This narrow scope limits the generalizability of the findings across the broader spectrum of pharmaceutical products. Secondly, the sample size employed in the study may not be sufficiently large to draw conclusions that are representative of the entire consumer population. As a result, the interpretations and implications should be approached with caution. Lastly, future research should consider expanding the scope to include other categories of pharmaceutical products in

order to gain a more comprehensive understanding of consumer behavior in the e-pharmacy domain.

While e-pharmacies offer a convenient shopping experience, they must prioritize *post-purchase factors* such as *on-time delivery* and *prompt responses to customer queries*. Failure to meet promised delivery times diminishes trust not only in the product but also in the platform. Moreover, the reliability of vendors plays a key role in shaping customer satisfaction; dissatisfaction can lead to losses in time, money, energy, and trust.

Online service quality is critical for customer retention and satisfaction. Enhanced experiences lead to positive *word-of-mouth* (WOM), contributing to a mutually beneficial outcome for both customers and providers. Many e-pharmacy websites now offer value-added features like health blogs to educate users about drug indications, side effects, and dosages, thereby improving health literacy and awareness.

In light of the COVID-19 pandemic—when brick-and-mortar pharmacies were largely inaccessible—consumers increasingly turned to online platforms for their pharmaceutical needs. This shift represents both a challenge and an opportunity for global e-pharmacy platforms. Given the sector's growing role, the Indian government should consider implementing robust regulations to ensure the safe, effective, and ethical operation of e-pharmacies. With appropriate oversight, e-pharmacies can contribute significantly to both public health and the broader pharmaceutical industry in the years ahead.

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