International Journal of Research in Marketing Management and Sales



E-ISSN: 2663-3337 P-ISSN: 2663-3329 Impact Factor (RJIF): 5.95 www.marketingjournal.net

IJRMMS 2025; 7(2): 123-128 Received: 15-06-2025 Accepted: 17-07-2025

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E-Pharmacy adoption in Tamil Nadu: An analysis of consumer behavior and satisfaction

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DOI: https://www.doi.org/10.33545/26633329.2025.v7.i2b.276

Abstract

The digital revolution has significantly transformed various sectors, including healthcare, with the emergence of e-pharmacies. These online platforms allow consumers to purchase medications and health products with enhanced convenience, broader product range, and competitive pricing. The research adopts a descriptive and analytical approach, utilizing a structured questionnaire to collect primary data from a diverse sample of consumers across Tamil Nadu. The study focuses on understanding consumer behavior, satisfaction, and the challenges faced when using e-pharmacy services. Key variables examined include convenience, pricing, product availability, delivery speed, and the perceived trustworthiness and security of these online platforms. The study also investigates the impact of demographic factors such as age, gender, income, and digital literacy on the adoption of e-pharmacy.

Keywords: Coimbatore, social media marketing, buyer behaviour, digital literacy

Introduction

An online pharmacy, internet pharmacy, mail-order pharmacy or E-Pharmacy is a pharmacy that operates over the internet and sends the orders to customers through mail or shipping companies. An E-Pharmacy model is required to have two operating components for dispensing prescription medicines. The application of internet to access drugs and diagnostics which begin early in advent of info age has matured into portals or virtual drugs stores popularly known as "Internet pharmacy" or "Online pharmacy" or "Web pharmacy". A term that refers to the existence of an online pharmacy that offers medical care providers the ability to prescribe medications for patients online. These medications can then be delivered to patients without ever requiring them to leave the confines of their homes. Epharmacy is an online pharmacy, which operates over the internet and provides medicines to consumers through mail or shipping companies. According to Marla Curie Consumer attitude is defined as individuals with likes and dislikes. When the preponderance of people in a particular group feel one way or another about a product, service, entity, person, place or thing, it is said to be a generalized consumer attitude that could affect the marketing of that person, product or entity in positive or negative ways. Marketers strive to influence consumer attitudes, and understanding the prevailing attitude is the first step to changing it if needed. Consumer attitude may be defined as a feeling of favorableness or un favorableness that an individual has towards an object. As we, all know that an individual with a positive attitude is more likely to buy a product and this results in the possibility of liking or disliking a product. Online buying is defined as the activity or action of buying products or services over the Internet. It means going online, landing on a seller's website, selecting something, and arranging for its delivery. The buyer either pays for the good or service online with a credit or debit card or upon delivery. Concept of Consumer behavior which mainly depends on the influence of values, beliefs, culture, climate, customs, practices and social structure etc. Consumers create demand for Goods and Services. A Business Firm provides delivery or supply of goods and services to the Customers or Consumers. Due to increased competitions, the scenario of products and service quality has been changed a lot. Nowadays, companies are trying to offer the best service to retain customers. The old customers were not being attended to properly by the salesman, but now customers are getting a royal welcome from a salesperson. Concept of online pharmacy from the first stage of using pharmacy near the place of stay to the modern era where the online pharmacy is there.

Corresponding Author: Dr. Tam Hameed Kan Research Supervisor, MEASI Institute of Management, University of Madras Chennai, Tamil Nadu, India This modern ideas of online pharmacy helped the people get their necessary medicine at their doorstep. This has not just made the pharmacy better but helped it reach the level of perfection when it comes to online ordering. Thus such an online market will bring people the savior that they need in case of ailments. The changes in ways of getting the medicine in the right place should follow the process of improving demands and faster service.

Opportunities

- Changing trends: People are very brand conscious. They are interested in buying branded stuff rater then local. If such stuff is available cross border they will not mind it ordering through e-commerce. Online buying is fast and effective even financial transactions can be made from any part of the world. People of tomorrow will feel more comfortable to buy products through internet only.
- Increasing number of user: Daily number of internet users is increasing. People feel more comfortable to shop online.
- Regular Global expansion: Online buying can be operated anywhere any time without any interruption. It always has a scope of expansion. All new population and existing population who are not the user of e commerce are the target expansion.
- **High availability** (24 hour and seven days a week): Along with each and every click of the mouse business is in operation. Those who are busy in day time and cannot spare time for them self, have all the opportunity to shop as per their convenient time even during late night hours.
- Wide business growth: E business has wide scope and broader vision to grow. Business always took place in gap. Gap filling is a never ending process hence the growth of business is also never ending process.
- **Advertising:** Advertising is cost effective as compare to conventional offline system.

Statement of the problem

Online buying that glorious invention which allows people to buy things from the comfort of their homes. No more travelling to multiple stores to find the right product; no more having to deal with over-enthusiastic sales persons; no more standing in long lines at the checkout counter. The ecommerce boom has certainly changed the way we shop for the better. But, like everything else, the world of online shopping is not all roses. Despite all the efforts of ecommerce companies to alleviate them, there are a few problems that customers still have to face while buying online. The biggest problem while buying things online is that you have no guarantee of a product's quality. Reviews are not always reliable and all the research can't assure you of a product's quality; fraudulent sellers who intentionally mislead customers to increase sales are the prime reason for faulty/sub-par products being sold online. One predicament that constantly turns up while buying online is when the order will be delivered. While all e-commerce sites have order tracking systems for their customers, they aren't always accurate. Whether a customer is paying by credit/debit card, net banking, or one of the several digital wallets that exist today, the failure of digital payments always looms overhead while making online transactions. A faltering internet connection or a technical glitch often

results in the payable amount being debited from a customer's account without being credited to the selling party. This is commonplace on all e-commerce sites when your order amount isn't high enough to qualify for free shipping. And even when it is, sometimes these shipping charges are added on each individual product (if you're buying multiple products of course) and not the collective order. Since there is no idea of product's quality until you hold it in your hands, returning things bought online is quite common. But most sites have vague return policies that can leave you with a low-quality product and no way to return it. The same applies for guarantees, as most sites don't clearly mention what the policy is for a product and then refuse to carry out replacements if you receive a damaged product. Cyber security, or more precisely the lack of it, is a major problem on the internet today. E-commerce sites record important customer data like name, phone number, address, and bank details. If these sites don't implement stringent cyber security measures, your data is at risk of falling into the wrong hands who can then wreak havoc on your bank account.

Need for the study

- Buyer behavior is studied to predict buyers' reaction in markets. If a firm understands its customers, it becomes successful in the market place. The success of any business is based on understanding the consumer and providing the kind of products that the consumer wants. The consumer decides what to buy, when to buy and also what not to buy. One cannot thrust a product on a consumer. A marketer sells what the consumer wants. So, emphasis is placed on knowing what the consumers' wants are.
- Consumers respond favorably while evaluating the products that best satisfy their needs. A marketer studies how consumers spend their available resources on the consumption of related items. It includes the study of what they buy, when they buy it, where they buy it and how often they use it. So, a knowledge of consumer behavior will be of immense help to the marketer which will help to satisfy their needs.
- A firm must plan its production and distribution to suit the needs of consumers. Thus, the extent of consumer understanding determines the effectiveness of marketing mechanism.

Objectives

To assess the level of consumer awareness about epharmacy services in Tamil Nadu, including their knowledge of available platforms, their features, and the products they offer. This objective helps to establish a baseline understanding of market penetration.

To identify the key factors that influence a consumer's decision to use or not use e-pharmacy platforms. This includes factors such as convenience, pricing and discounts, availability of medicines, and home delivery.

To analyze the role of demographic factors such as age, gender, income, and education level in shaping consumer attitudes and their adoption of e-pharmacy services. For instance, younger, more digitally literate individuals may show a greater propensity for adoption.

To evaluate the importance of trust and security for consumers when using e-pharmacy services. This involves understanding concerns related to the authenticity of medicines, data privacy, and secure payment gateways.

To examine the perceived risks associated with online medicine purchases, such as the possibility of receiving counterfeit or expired drugs, self-medication without proper consultation, and a lack of professional guidance.

To compare consumer satisfaction levels between epharmacies and traditional brick-and-mortar pharmacies, focusing on aspects like customer service, product range, and the overall buying experience. This helps to highlight the competitive advantages and disadvantages of each.

To determine the influence of social factors such as peer recommendations, social media campaigns, and expert endorsements on a consumer's intention to adopt e-pharmacy services.

To investigate the specific challenges and barriers that consumers in Tamil Nadu face when using e-pharmacy services, including issues with delivery time, prescription verification, and user-friendliness of the platform.

To provide recommendations for e-pharmacy companies to enhance their services and marketing strategies to better meet the needs and preferences of consumers in Tamil Nadu.

Review of Literature

Made comparison over the course of five decades, American annual expenditure on pharmaceutical drugs has increased by more than \$350 billion. This drastic increase has led many patients to struggle to afford their necessary, and potentially life-saving, medications. Today's pharmaceutical prices are largely due to the fact that namebrand drug manufacturers have few restrictions on how much they can charge for their products. Additionally, name-brand manufacturers are able to monopolize the manufacture of their drugs because patent laws prevent other manufacturers from using the formula of these drugs for two decades. To combat these high prices, this Note proposes a partnership between telemedicine companies and online pharmacies that promotes the prescription of cheaper, generic-brand drugs. By combining the cheaper, mobile services of telemedicine with generic-brand drugs offered by online pharmacies, this partnership can increase access and quality of healthcare while driving down price.

Has made study by focusing on spread and drivers for adoption of various online platforms. Adoption of different online platforms is used for information-seeking, views and e experience-sharing; and buying online, by different customer segments. The agenda of the marketers is to encourage the adoption of these convenient solutions. Understanding the triggers and drivers are equally crucial for the survival and growth of online marketers, especially when it results into changed buying payment habits. Thus, this research study examines online buying behavior of Indian retail customers in the preference for E-wallet as payment platform; and the factors as drivers to shift from other payment options.

Examines that e-commerce adoption is one core strategic measure of the Association of Southeast Asia Nations (ASEAN) Economic Community Blueprint 2025. However, such an effort faces great challenges due to the socio-economic heterogeneity across the member states. This paper integrates individual and country-level drivers to empirically test the model of e-commerce adoption among citizens in ASEAN. The model examines the relationships between four key drivers: demand, supply, infrastructure

and regulation, on individual online purchasing behavior.

Article tells about the recent decade which has been exceptionally revolutionary in terms of the promising innovative progressions and technological advancements. Noticing extraordinary advancements in every field of science and innovation because of the heavy vested interest in innovative work, development, education and business everywhere across the world. New advances are merging and making life simpler and more proficient. The accessibility of internet and digitalization have altered the way of life of people. The pandemic has caused a massive surge in e-commerce as a platform both from an industry and from a company point of view. Today, the online commercial centers have widened its tentacles and offers nearly everything that one can perhaps imagine, which even includes something like medications. The focus towards epharmacies have been in discussion since long but the prominence it has gained since the start of the pandemic puts in the spotlight.

Explored that the transforming global scenario with impacts like COVID-19 are causing consumer buying shift from traditional purchase behavior to online purchase behavior. The present study proposed the unique linkage of performance expectancy and effort expectancy towards consumers' adoption intention towards online pharmacy platform in Indian context. The study involved 350 survey participants from national capital region of India and application of stepwise hierarchical multiple regression technique to explore empirical relationships among the study constructs proposed on the bases of previous literature. The performance expectancy and effort expectancy of Indian online users found to influence their adoptive behavior significantly. The study visualized multiple findings and results of high worth for scholars and industry practitioners.

Research Methodology

Research means a search for knowledge. It refers to scientific and systematic research pertinent information on a specific topic. Research methodology is a way to systematically solve the problem. In this the researcher studies about the various steps that are generally adopted in studying is research problem along with logic behind them. Research methodology has many dimensions and research methods to constitute the part of the research methodology. It is necessary for the researcher to know not only the research methods/techniques, but also the methodology.

Research Design

A research design is purely and simply the framework or plan for a study that guides the collection and analysis of data. It is a blue print that is followed in completing a study.

Descriptive Research Design

Descriptive research design includes surveys and fact findings, enquires of different kinds. The major purpose of Descriptive research is description of state of affairs, as it exists at present. In social business research we quiet often use the term Ex post facto research for descriptive studies. The main characteristic of this method is that the researcher has no control over the variable; he can only report what has happened or what is happening. Most Ex post facto research projects are used for descriptive studies in which the

researcher seeks to measure such items, for example, frequency of purchasing, and consumer preferences on products or services. When the researcher is interested in knowing the characteristics of certain groups such as age, occupation, experience etc., a descriptive study is necessary. Hence the researcher has chosen descriptive research method for the study.

Sampling Methodology

- **Population:** The study of various characteristics relating to items \ individual belong to a particular group is called as population. The population of the study consists of the different customers like private employee, business man, student and self-employed.
- Sampling frame: The frame describes the population in terms of sampling units. Samples are drawn from lists are called as sources lists \ sampling frames. The source list of existing customers was provided by the online shoppers along with respondent's details.
- Sampling Unit: It is a set of elements considered for selecting a sample. In this research, we have taken survey from customers using online purchasing of medical products in Tamil Nadu.
- Sampling Method/ Technique: The sampling technique used was non-probability sampling method is adopted in this study. It refers to the technique where the probability of each case being selected from the total population is not known.
- **Purposive Sampling:** It is a non-probability sampling technique where the researcher selects units to be sampled based on his own existing knowledge, or his professional judgment.

Chi-Square Tests

Null hypothesis (H₀): There is no association between the usage level of internet users and buying pattern towards epharmacy.

Alternate hypothesis (H₁): There is association between the usage level of internet users and buying pattern towards e-pharmacy.

		Chi-Square Tests			
	Value	DF	Asymptotic Significance (2-sided)		
Pearson Chi-Square	72.362a	54	.048		
Likelihood Ratio	71.722	54	.054		
Linear-by-Linear Association	6.947	1	.008		
N of Valid Cases	110				

a. 72 cells (94.7%) have expected countless than 5.The minimum expected count is 19.

Inference: Since p-value is 0.048 which is <0.05 we reject the null hypothesis. At the level of significance, there exists enough evidence to conclude that there is association between the usage level of internet users and buying pattern towards e-pharmacy.

Mann-Whitney Test

Null hypothesis (H_0) : There is no significant difference between mean rank of married and unmarried respondents' experience with reference to e-pharmacy platform to purchase the medicine.

Alternate hypothesis (H_1) : There is significant difference between mean rank of married and unmarried respondents' experience with reference to e-pharmacy platform to purchase the medicine.

Ranks						
	Marital Status	N	Mean Rank	Sum of Ranks		
	Married	59	69.67	4110.50		
Experience	Unmarried	51	39.11	1994.50		
	Total	110		·		

Test Statistics ^a				
Experience				
Mann-Whitney U	668.500			
Wilcoxon W	1994.500			
Z	-5.500			
Asymp. Sig. (2-tailed)	<.001			

Inference: Since p-value is 0.001 which is < 0.05 we reject the null hypothesis. At the level of significance, there exists enough evidence to conclude that there is significant difference between mean rank of married and unmarried respondent's experience with reference to e-pharmacy platform to purchase the medicine.

Multiple Regression Analysis

The dependent variable is consumer attitude (Y) and Independent variables are Consumer dimension (X1), Marketing dimension (X2), Ease(X3), Technical dimension (X4). The relationship is shortly estimated through multiple regression analysis and the results are presented below:

Model Summary						
Model R R Square A		R Square	Adjusted R Square	Std. Error of the Estimate		
1	886a	785	777	2.368		

a. Predictors: (Constant), Technical dimension, marketing dimension, ease, consumer dimension

From the above table, it is found that R Square Value is 0.785 and adjusted R Square Value is 0.777 with the standard error of estimate as 2.368. It implies that all the independent variables explain 7.85% and regression fit is verified in the following ANOVA table:

	ANOVA ^a							
	Model	Sum of Squares	DF	Mean Square	F	Sig.		
	Regression	2150.705	4	537.676	95.856	$<.001^{b}$		
1	Residual	588.968	105	5.609				
	Total	2739.673	109					

A). Dependent Variable: Attitude

B). Predictors: (Constant), Technical dimension, marketing dimension, ease, consumer dimension

From the above Table, it is found that f=95.856, p=<0.001 are statistically significant at 5% level. This implies that the regression fit is significant and concludes that the cumulative influence of independent variables on reliability is statistically significant. Hence the independent influences of these variables on reliability is analyzed in the following table.

	Coefficients ^a					
34.1.1		Unstandardized Coefficients		Standardized Coefficients	т	G*-
	Model	В	Std. Error	Beta	1	Sig.
	(Constant)	198	1.151		172	.864
	Consumer dimension	.308	.137	.303	2.250	.027
1	Marketing dimension	071	.133	067	534	.595
	Ease	.580	.137	.503	4.219	<.001
	Technical dimension	.186	.144	.171	1.288	.201

a. Dependent Variable: Attitude

Inference

Here the coefficient of X3 is 0.580 represents the partial effect of ease on client satisfaction, holding the other variables as constant. The estimated positive sign implies that such effect is positive that customer attitude would increase by 0.580 for every unit increase in ease and this coefficient value is significant at 1% level.

The coefficient of X1 is 0.308 represents the partial effect of consumer dimension on customer attitude, holding the other variables as constant. The estimated positive sign implies that such effect is positive that consumer attitude would increase by 0.308 for every unit increase in consumer dimension and this coefficient value is significant at 1% level and so on. The multiple regression equation is

Y = -0.198 + 0.308 X1 - 0.071 X2 + 0.580 X3 + 0.186 X4

Kruskal-Wallis Test

Null hypothesis (H_0) : There is no significant difference between mean rank of the customer trust with regards to epharmacy.

Alternate hypothesis (H_1) : There is significant difference between mean Rank of the customer trust with regards to epharmacy.

Ranks						
	Occupation	N	Mean Rank			
	Employed	26	66.29			
	Businessman	35	71.91			
Trust	Student	34	36.18			
	Other	15	42.30			
	Total	110				

Test Statistics ^{a,b}				
Trust				
Kruskal-Wallis H	30.563			
Df	3			
Asymp. Sig.	<.001			

Inference: Since p-value is 0.001 which is < 0.05, we reject the null hypothesis. At the level of significance, there exists enough evidence to conclude that there is significant difference between mean ranks of the customer trust with regards to e-pharmacy.

Chi-Square Tests

- **Null hypothesis** (**H**₀): There is no association between the usage level of internet users and buying pattern towards e-pharmacy.
- Alternate hypothesis (H₁): There is association between the usage level of internet users and buying pattern towards e-pharmacy.

		Chi-Square Tests			
	Value	DF	Asymptotic Significance (2-sided)		
Pearson Chi-Square	72.362a	54	.048		
Likelihood Ratio	71.722	54	.054		
Linear-by-Linear Association	6.947	1	.008		
N of Valid Cases	110				

a. 72 cells (94.7%) have expected countless than 5.The minimum expected count is 19

Inference: Since p-value is 0.048 which is <0.05 we reject the null hypothesis. At the level of significance, there exists enough evidence to conclude that there is association between the usage level of internet users and buying pattern towards e-pharmacy.

Findings

- The single most influential factor in driving e-pharmacy adoption is convenience. Consumers in Tamil Nadu, particularly those in urban areas, appreciate the ability to order medicines from home, which saves time and effort, especially for the elderly or those with chronic illnesses.
- Social media plays a crucial role in shaping consumer perceptions, especially among younger demographics.
 Peer recommendations, celebrity endorsements, and social media campaigns act as a social influence that encourages or discourages the adoption of e-pharmacy services.
- The adoption of e-pharmacies is not uniform across all groups. Demographic factors like age, education, and digital literacy heavily influence usage. Younger, more educated, and internet-savvy individuals are far more likely to use e-pharmacy services than older generations or those with lower digital literacy.
- Consumers have concerns regarding perceived risks, particularly concerning financial and psychological security. This includes worries about the safety of online payment gateways and the privacy of their personal health data. Platforms that offer secure payment options and have transparent privacy policies are more likely to gain consumer confidence.
- E-pharmacies are favored for their ability to provide a
 wide range of products, including both prescription
 drugs and over-the-counter items like dietary
 supplements and cosmetics. Consumers appreciate the
 availability of medications that may be out of stock at
 local pharmacies.
- A positive user experience is critical. Factors such as user-friendly website and app design, fast and reliable delivery, and responsive customer service play a significant role in customer satisfaction and repeat business. Post-purchase support, like timely delivery and quick query resolution, is especially important.
- While consumers buy various items online, there's a

particular preference for purchasing prescription drugs and chronic disease medications from e-pharmacies. This is often driven by the need for regular refills and the convenience of having them delivered to the doorstep.

Suggestion and Recommendation

It is suggested that the dispensation of scheduled drugs should be against a valid prescription from a Registered Medical Practitioner ("Prescription Drugs") and must be undertaken by, or under the direction and personal supervision, of a registered pharmacist.

It is suggested that the Narcotic medicines (like morphine) and other habit-forming drugs (like sleeping pills) should be restricted to be sold through an e-Pharmacy model. There should be adequate checks and balances in place to prevent sale of any such drugs.

It is recommended that an e-Pharmacy should have a team of qualified pharmacists for validation of prescription and for handling any drug related queries from the patients. Contact information should always be clearly disclosed for any communication.

It is suggested that the website / mobile application must clearly provide information regarding the logo, license number, and its authenticity.

It is suggested that the name and contact information (address, phone number, and e-mail id) of every pharmacy, along with the name of the owner of such pharmacy, from where the dispensation of drugs may be undertaken, after the order has been placed on the e-Pharmacy regarding the same.

It is recommended that the suitable arrangements must be made to ensure that the medicines are packed, transported, and delivered in such a way that their integrity, quality, and effectiveness are preserved.

Conclusion

An e-Pharmacy aligns very well with the state development objectives and has clear and tangible benefits to the consumers as well as the industry. Meanwhile, it has also been observed that growth of e-Commerce and retail are complimentary and reinforce each other. By leveraging the technology in a smart way and under stringent regulatory control, the e-Pharmacy has a scope of adding immense value to the existing retail industry in Tamil Nadu.

Besides, Internet-based transactions are well aligned to address key known issues in pharmacy retail for tracking authenticity, traceability of medicine, abuse prevention, addressing consumption of drugs without prescription, tax loss, and value-added services for consumer empowerment in healthcare, which are all key areas of national development.

Additionally, this would also enable the doctors to adopt e-Prescriptions in a big way, which would in turn address the significant issue of errors due to misreading of doctors' handwriting as well as recording of data for public health planning.

E-Commerce offers many advantages to consumers and the most important is the convenience or ease with which drugs can be procured. The benefits the e-Pharmacy model brings to consumers, who are the majority, should be the first priority of the Government. It is critical that the regulatory framework in the country be conceptualized keeping in mind the larger interests of the consumers in the state. If

technology is available to cut the intermediary costs on medicines, it must be allowed to be used to its full potential as it will bring down the retail price of many drugs and benefit the middle-class, which is most impacted by the price hikes.

This is the right time for the Government of India to define policies and guidelines for e-Pharmacies and come up with a clear-cut operating model, in line with the concerns of the regulator, while providing benefits to the consumers.

Online pharmacy is becoming more popular day by day with the increase in the usage of World Wide Web for understanding customer's need for online selling has become challenge for marketers. Specially understanding the consumer's attitudes towards online buying, making improvement in the factors that influence consumers to purchase online and working on factors that affect consumers to purchase online will help marketers to gain the competitive edge over others.

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