

CONSUMER PERCEPTION AND ATTITUDE TOWARD E-PHARMACY APPS: A SOR FRAMEWORK APPROACH USING SMART PLS

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ABSTRACT

The growing popularity of e-pharmacy apps has critically challenged the traditional approach of buying medicines. Consumers seeking convenience of buying medicines choose e-pharmacy apps that simplify the procurement of over-the-counter drugs and prescription medicines. E-pharmacy apps render a quick and easy healthcare experience.

Utilizing the SOR model, this paper attempts to offer insightful analysis of pertinent studies on consumer perception and attitude toward e-pharmacy apps in Mumbai. This study assists doctors and researchers in deciphering the elements influencing consumer acceptance and use of various apps. This knowledge guides the development and execution of successful plans to improve customer experience and support responsible use of e-pharmacy apps. Moreover, it becomes feasible to remove obstacles, doubts or inhibitions that might prevent the general acceptance of e-pharmacy apps, thus promoting a more favorable consumer perception.

The acceptance of e-pharmacy and its usage depends on the perception about its utility. If its perceived as being useful and convenient consumers tend to use it. When the purchase intention is high it leads to increased satisfaction levels. The findings of the paper reveal the intricate nature of consumer decision making about usage of e-pharmacies. This offers a valuable insight for researchers and industry practitioners while further improving their offerings and the entire consumer experience.

Keywords:

E-pharmacy, consumer behaviour, perception, attitude, SOR, customer perception about e-pharmacy, buying online

INTRODUCTION

The fast development of digital technologies has fundamentally impacted and transformed different industries, including the healthcare industry. The rise of e-pharmacy apps, which gives consumers quick access to drugs and medical treatments from the comfort of their homes, is one of the most important developments in the world of online marketing.

In the early 2000s, the idea of e-pharmacy also referred to as online pharmacy or internet pharmacy started attracting customers. Now majority products are listed online and available for buying. Medicines are just one of them, both prescription and non-prescription.

Online pharmacy is an internet-based vendor selling medicines online. These internet-based vendors are called internet pharmacy, e-pharmacy or cyber pharmacy.

The efficiency and dependability of e-pharmacy services have been much improved by the combined application of strong e-commerce systems, safe payment gateways, and sophisticated supply chain management technologies. Further improving the customer experience are tailored recommendations and simplified order processing made possible by the use of artificial intelligence and data analytics. Still, consumer opinions and attitudes toward e-pharmacy apps will mostly determine their successful acceptance and use.

The study attempts to find out the factors that affects the consumer attitude and perception towards e-pharmacies. What triggers an interest towards buying medicines online, and the buying behaviour towards e-pharmacy in Mumbai. It also investigates the consumer intentions that drives them to purchase medicines through e-pharmacy applications. Is it the convenience, and usefulness that attracts and motivates customers towards such a purchase? What is the intent behind using e-pharmacies? Are there any risks attached to such purchases?

The study can be useful to create e-pharmacy apps, the features that can be included in it and the changes in the present service provided by them. It will better the service provided and makes consumers aware of the associated risk factors. It dives into the consumer's mind to know the perception towards e-pharmacy apps. Thus, supporting e-pharmacy app developers and entrepreneurs to provide better interface and service.

1. REVIEW OF LITERATURE

The investment in e-commerce for medical and pharmaceuticals has been rising. This has led to a growth in online and offline supply available to customers. These new developments have been able to assist the Indian pharmaceutical industry in improving their reach to customers and better serve them.

The shift from offline to online ordering of medicines is the result of convenience provided by the e-pharma or e-medicines and the increasing penetration of internet. Also, elderly, disabled and people living in remote areas have got used to this technologically advanced means of

buying their medicines. Though its also true that a considerable number of people still rely on the traditional method of buying medicines from drug stores.

There have been fraudulent cases and inadequate information regarding pharmaceuticals and medicines that have been shared on these e-pharma apps and sites, making them unethical. Also, internet prescription cannot be a perfect substitute for the in-person physician care, since patients are at risk of adverse effects while using online treatment.

Examining the customer perception of e-pharmacy apps is absolutely important since it directly affects their adoption and usage pattern. Previous studies have pointed out a number of elements influencing customer perceptions of e-pharmacy apps. These elements comprise perceived usefulness, ease of use, trustworthiness, privacy and security issues, convenience, perceived risk, availability of information and support (Ushir & Diana, 2022).

One of the main determinants of customer perception and attitude toward e-pharmacy applications is convenience. The convenience attached to ordering drugs online and having them delivered right at their doorstep is much valued. Convenience clearly impacts consumer satisfaction and the likelihood of continuing to use the online purchase method (Pappas, Pateli, & Karasavoglou, 2022); (Baines, Elliott, & Regan, 2020).

‘Perceived usefulness’ is defined as the degree to which a customer feels using an e-pharmacy app will help with their healthcare management.

While researching on the subject it was found that factors that influence the usage of e-pharmacy apps are as follows:

- Customer impression is highly influenced by the design and usability of e-pharmacy apps.
- Easy navigating of a user-friendly interface improves user experience and satisfaction.
- Consumers are more likely to find e-pharmacy apps with simple navigation and easy designs favourable (Lee & Kim, 2019).
- The app's visual attractiveness as well as its practical features shape the user attitudes.
- Trust of the customer and perceived usefulness of e-pharmacy apps depend mostly on accurate, high-quality, thorough information.
- Apps that provide comprehensive medication information—including dosage instructions, possible side effects, and drug interactions (Chiu, Hsu, & Wang, 2020) build trust among customers and promote positive attitudes. Even though its true that this depends completely on the reliability of this knowledge.

Consumer trust with regards to e-pharmacy apps:

Acceptance and the usage of the e-pharmacy apps depends on the consumer trust (McCole, Ramsey, & Williams, 2010; Bélanger, Hiller, & Smith, 2022; Yadav, Pichholiya, Sheth, Gupta,

& Choudhary, 2020; Suh & Han, 2003; Patel & Pandit, 2022; Arekar, Jain, & Kumar, 2021; Mou & Cohen, 2017). Research reveals that in the case of health-related apps, perceived usefulness greatly influences user satisfaction and continuance intention (Zhou, Lu, & Wang, 2019).

Perceived security and privacy of personal and financial data hugely impacts the trust in e-pharmacy apps. (Khan, Khan, & Akhtar, 2021) Gaining consumer trust depends on strong security elements such as data encryption and safe payment systems.

Openness in privacy rules also helps to build more confidence and a better view of the app. Risk associated with their usage impacts the attitude of consumers toward e-pharmacy apps. They might be concerned about hazards like getting fake drugs, running behind schedule or mistakes in delivery, or having their personal data hacked.

The first adoption and ongoing use of e-pharmacy apps depend much on consumer satisfaction. Positive assessment of the app's performance including elements of simplicity of use, service quality, dependability, and general user experience, results in satisfaction.

Satisfied consumers are more likely to show loyalty and suggest the app to others (Wang, Lu, & Wang, 2023). When the app regularly meets or surpasses consumer expectations, it offers a flawless and useful experience, thus raising high degrees of satisfaction. Likewise, research (Thakur & Hsu, 2018) underlines how in the case of e-pharmacy apps, customer satisfaction moderates the link between loyalty and service quality.

Factors that improve the perceived value of e-pharmacy apps are the availability of complete services like:

- 24/7 customer support
- Timely delivery
- Access to virtual consultations with healthcare professionals.

Consumers are more likely to use and suggest apps that provide a wide range of dependable and convenient services. (Pappas, Pateli, & Karasavoglou, 2022). These characteristics support better customer impressions and higher app acceptance.

One important behavioral result influenced by many elements such as perceived convenience, trust, and usefulness is intention to use e-pharmacy apps. This construct captures a consumer's preparedness and eagerness to adopt and routinely utilize e-pharmacy services. Strong usage intentions are formed by positive user experiences motivated by app dependability and value it provides (Wang, Lu, & Wang, 2023) Often, high intention to use is a sign of real adoption and regular application of the app's features. Research also revealed that consumers' intention to use e-pharmacy apps is much influenced by perceived simplicity of use and value (Haq, Sneha, & Pathak, 2019).

Since there is lack of awareness among consumers with regards to the benefits associated with the usage of online pharmacy among common people there is a need to demonstrate the benefits of using e-pharmacies along with a detailed instruction to the consumers (Srivastava et al., 2020)

Developers and marketers hoping to improve the reach and efficacy of e-pharmacy apps must first understand the elements influencing consumer attitude and perception. The Stimulus-Organism-Response model offers a strong framework for understanding how external stimuli (S), such as convenience, risk and usefulness, affect internal states (O), such as consumer attitudes and perceptions, leading to behavioural responses (R) intention to use, actual usage, and continued loyalty (Mehrabian & Russell, 1974).

The literature review reveals gaps as mentioned below:

- The need of city-specific studies in Mumbai
- Varied demographic segments
- Long-term consequences on conventional pharmacies
- Application of the SOR model in understanding consumer perception and behavior toward e-pharmacy apps.

Correcting these gaps will improve focused plans and service development.

2. RESEARCH METODOLOGY

Purchases intentions toward e-pharmacy in Mumbai were investigated using a cross-sectional correlation field study. A structured questionnaire scored on a 5-point Likert scale was used to gather data; 1 = strongly disagree, 5 = strongly agree. Using Cronbach's alpha, the validity and reliability of the questionnaire were investigated; internal consistency was cut off at 0.7. The study included 251 Mumbai respondents with almost equal gender distribution using a non-probability purposive sampling method.

2.1. Research Objectives:

1. To study the consumer buying behaviour towards e-pharmacy in Mumbai
2. To study consumers intention to purchase medicines through E-pharmacy apps.

2.2. Hypothesis

H₁: Usefulness has a positive impact on intention of buying medicines through e-pharmacy.

H₂: Risk has a positive impact on intention of buying medicines through e-pharmacy.

H₃: Convenience has a positive impact on intention of buying medicines through e-pharmacy.

H₄: Intent has a positive impact on consumer satisfaction of buying medicines through e-pharmacy.

H₅: Convenience as a stimulus has a positive impact on intention as an organism which further has an impact on consumer satisfaction as a response towards buying medicines through e-pharmacy.

H₆: Usefulness as a stimulus has a positive impact on intention as an organism which further has an impact on consumer satisfaction as a response towards buying medicines through e-pharmacy.

H₇: Risk as a stimulus has a positive impact on intention as an organism which further has an impact on consumer satisfaction as a response towards buying medicines through e-pharmacy.

3. RESULTS AND DISCUSSION

The data were analysed using the Partial Least Squares-based Structural Equation Modelling (PLS-SEM) approach and the Smart PLS 4.0 application. This work implemented the variance-based PLS-SEM approach described by (Hair, Hult, Ringle, & Sarstedt, 2022).

Table 1: Reliability and Validity

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Convenience	0.870	0.880	0.905	0.657
Intent	0.945	0.946	0.955	0.753
Risk	0.934	0.935	0.948	0.751
Satisfaction	0.924	0.925	0.941	0.726
Usefulness	0.925	0.927	0.938	0.626

Construct reliability was assessed using the recommended levels for Cronbach's alpha (Wong, Tan, Tan, & Ooi, 2015), composite reliability, and rho A values greater than 0.70 ($\alpha > 0.70$) (Leguina, 2015). All Cronbach's alpha values exceeded 0.7, indicating strong internal consistency and construct dependability for each variable. The measurement model was refined according to (Hair, Hult, Ringle, & Sarstedt, 2022) criteria, which require outer loadings and composite reliability of at least 0.70, an AVE of at least 0.50, and an SRMR of less than 0.08.

Table 2: Discriminant Validity

Discriminant validity was confirmed using the Fornell-Larcker criterion (Ooi, Lee, Tan, Hew, & Hew, 2018).

	Convenience	Intent	Risk	Satisfaction	Usefulness
Convenience	0.811				
Intent	0.697	0.868			
Risk	0.278	0.34	0.867		

Satisfaction	0.761	0.795	0.295	0.852	
Usefulness	0.788	0.697	0.28	0.798	0.791

The table indicates that all correlation coefficients are lower than the diagonal coefficients. Therefore, according to the Fornell-Larcker criterion, the model demonstrates an excellent level of discriminant validity.

Table 3: HTMT Ratio

The Heterotrait – Monotrait (HTMT) ratio measures the proportion of unexplained to explained variance. An HTMT value below 1 is acceptable, while a value below 0.85 is preferred. In this study, all HTMT values are below 0.87, indicating that the constructs explain a significant portion of the variance, demonstrating strong construct validity (Khan, Bali, & Wickramasinghe, 2007). Consequently, discriminant validity is statistically confirmed, indicating that the measures are indeed distinct.

Table 4: Assessing the Measurement of Inner Model

Factor	Statement	Factor Loading (path-outer loading excel)	Tolerance	VIF
Usefulness	Buying medicines online allows me to get my shopping done more quickly.	0.763	0.356	2.802
	Buying medicines online is easy and convenient.	0.769		
	Online medicine information is clear, precise and easy to understand.	0.786		
	Buying medicines online is value for money.	0.751		
	Added value through functionality like personal medication profiles	0.805		
	As online pharmacies offer better deals and discounts, I prefer to use them.	0.819		
	Online pharmacies offer free shipping, so I prefer to do that.	0.776		
	When compared to an offline pharmacist, I prefer purchasing my medications online because of the lower prices.	0.825		
	Doctor / Pharmacist consultation services offered by E-pharmacy is very useful,	0.821		
Convenience	It is convenient to buy medicines online	0.823	0.448	2.228
	Buying medicines Online provides more options/choices	0.851		

	I can purchase medicines beyond opening hours.	0.748		
	It saves lot of time while shopping online	0.846		
	Buying medicines online provides home-delivery	0.780		
Risk	I may get illegal, substandard, or falsified medicines	0.856	0.249	4.003
	Damage through inadequate storage or delivery precautions	0.902		
	Difficulty in evaluating quality of the product	0.874		
	I may lose money in case of incomplete transactions	0.854		
	I may not be able to return the medicines	0.828		
	Fears about the integrity of the medicines supplied	0.884		
Intent	I intend to shop medicines online	0.851	0.234	4.258
	If any online pharmacist offers a product that I need, I will shop it online	0.862		
	I will buy an item I viewed at this web site in near future	0.879		
	Given a choice of buying from a pharmacist and shopping online, I would purchase medicines online	0.851		
	I consider shopping online as main avenue for purchasing products	0.902		
	I see more percentage of my purchases happening on internet	0.868		
	I consider buying medicines online has many advantages as compared to buying from pharmacist	0.861		
Satisfaction	I am satisfied with my overall experience of buying medicines online.	0.808	0.285	3.506
	I am delighted with the service provided while buying medicines online.	0.879		
	Online pharmacies take care of product exchanges and returns promptly.	0.850		
	Any after-purchase problems I experience are quickly resolved by my online pharmacy brand.	0.848		

	It is easy to take care of returns and exchanges while buying medicines online.	0.879		
	I enjoy buying medicines online.	0.846		

Table 5: Factor loading

In this study, the validity of the measurement model and the strength of the factor loadings have been assessed. Any value greater than 0.7 is deemed to be an exceptional level of loading. The table above displays the factor loading of each individual statement for each construct. The factor loadings exceed the standard range, indicating that all the indicators are converging towards the latent variables.

The Variance Influence Factor (VIF) is employed to assess whether the assumption of multicollinearity has been violated. This ratio is determined for each independent variable. A high VIF indicates a strong correlation between the independent variable in question and the other variables in the model. The variable has an impact on the standard error of the regression. Tolerance is the inverse of VIF. Preferably, its value should be below 10. It is deemed acceptable when the value is below 10 and is considered desirable when the value is below 5. Thus, the table above clearly shows that the VIF values for all the factors are below 5, which is highly desirable.

Table 6: Structural Model/ Path Analysis

The hypotheses framework was analysed using PLS-SEM. Both multiple regression and path analysis have been established, along with a measurement and structural model.

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
Convenience -> Intent	0.368	0.356	0.105	3.517	0.000
Intent -> Satisfaction	0.795	0.797	0.054	14.609	0.000
Risk -> Intent	0.134	0.139	0.058	2.288	0.022
Usefulness -> Intent	0.370	0.380	0.114	3.254	0.001

H₁: Usefulness has a positive impact on intention of buying medicines through e-pharmacy.

When evaluating the relationship, it reveals a positive impact of 0.370. As a result, for every 10% increase in usefulness, the intention to use increases by 3.70%. The researcher stimulates the boot strapping process with a sample size of 5000, resulting in an average impact of 0.380, which is marginally higher than the original impact between the two variables and an average variation of 0.114, with t-statistics 3.254 and a significant value of 0.001.

H2: Risk has a positive impact on intention of buying medicines through e-pharmacy.

When evaluating the relationship, it reveals a positive impact of 0.134. As a result, for every 10% increase in usefulness, the intention to use increases by 1.34%. The researcher stimulates the boot strapping process with a sample of 5000, resulting in an average impact of 0.139, which is marginally higher than the original impact between the two variables and average variations 0.058, with t-statistics 2.288 and a significant value of 0.022.

H3: Convenience has a positive impact on intention of buying medicines through e-pharmacy.

When evaluating the relationship, it reveals a positive impact of 0.368. As a result, for every 10% increase in usefulness, the intention to use increases by 3.68%. The researcher stimulates the boot strapping process with a sample of 5000, resulting in an average impact of 0.356, which is marginally higher than the original impact between the two variables and average variations of 0.105, with t-statistics 3.517 and a significant value of 0.000.

H4: Intent has a positive impact on consumer satisfaction of buying medicines through e-pharmacy.

When evaluating the relationship, it reveals a positive impact of 0.795. As a result, for every 10% increase in usefulness, the intention to use increases by 7.95%. The researcher stimulates the boot strapping process with a sample size of 5000, resulting in an average impact of 0.797, which is marginally higher than the original impact between the two variables and an average variation of 0.054, with t-statistics 14.609 and a significant value of 0.000.

Hypothesis:

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
Convenience -> Intent -> Satisfaction	0.293	0.283	0.085	3.461	0.001
Risk -> Intent -> Satisfaction	0.106	0.111	0.046	2.295	0.022
Usefulness -> Intent -> Satisfaction	0.294	0.306	0.102	2.893	0.004

In the present study, the researcher has taken convenience, usefulness, and risk as stimulus and Intent as an organism factor in determining the satisfaction as response of consumers towards buying medicines through e-pharmacy.

H5: Convenience as a stimulus has a positive impact on intention as an organism which further has an impact on consumer satisfaction as a response towards buying medicines through e-pharmacy.

When evaluating the relationship, it reveals a positive impact of 0.293. As a result, for every 10% increase in usefulness, the intention to use increases by 2.93%. The researcher stimulates

the boot strapping process with a sample size of 5000, resulting in an average impact of 0.283, which is marginally higher than the original impact between the two variables and average variations of 0.085 with t-statistics 3.461 and a significant value of 0.001.

H₆: Usefulness as a stimulus has a positive impact on intention as an organism which further has an impact on consumer satisfaction as a response towards buying medicines through e-pharmacy.

When evaluating the relationship, it shows a positive impact of 0.294. As a result, for every 10% increase in usefulness, the intention to use increases by 2.94%. The researcher stimulates the boot strapping process with a sample size of 5000, resulting in an average impact of 0.306, which is marginally higher than the original impact between the two variables and an average variation of 0.102 with t-statistics 2.893 and a significant value of 0.004.

H₇: Risk as a stimulus has a positive impact on intention as an organism which further has an impact on consumer satisfaction as a response towards buying medicines through e-pharmacy.

When evaluating the relationship, it reveals a positive impact of 0.106. As a result, for every 10% increase in usefulness, the intention to use increases by 1.06%. The researcher stimulates the boot strapping process with a sample size of 5000, resulting in an average impact of 0.111, which is marginally higher than the original impact between the two variables and average variations of 0.046 with t-statistics 2.295 and a significant value of 0.022.

Table 7: Model Fit

	Saturated model	Estimated model
SRMR	0.052	0.079
d_UIS	1.517	3.536
d_G	1.02	1.127
Chi-square	1426.091	1515.351
NFI	0.814	0.802

The SRMR value was lower than the recommended threshold ($SRMR < 0.080$ $SRMR < HI95$), as shown in the table above. A SRMR value less than 0.080 indicates an acceptable model fit; however, these thresholds are preliminary and should be investigated further. The recommended value for NFI is between 0 and 1. The closer the NFI to one, the better the fit. The value from the above table is 0.814, which is nearly equal to one. It represents a good fit.

Table 8: R² / R Square

	R-square	R-square adjusted
Intent	0.560	0.555
Satisfaction	0.633	0.631

R^2 is used to evaluate the goodness of fit in regression analysis. R^2 values of 0.75, 0.50, and 0.25 are categorized as substantial, moderate, and weak. R^2 values of 0.90 or higher are typical indicators of overfitting. The R^2 value from the above table is 0.633, which appears to be an excellent value.

Table 9: F^2 / F Square

	f-square
Convenience -> Intent	0.116
Intent -> Satisfaction	1.722
Risk -> Intent	0.037
Usefulness -> Intent	0.117

The effect size is a measurement of the magnitude of an effect that has no impact on sample size. F^2 values of 0.020 to 0.150, 0.150 to 0.350, or greater than or equal to 0.350 indicate a weak, medium, or large effect size, respectively. In this study, the F^2 values for the hypothesized relationships ranges from 0.037 to 1.722.

Table 10: Q^2 / Q Square

	Q^2 predict	RMSE	MAE
Intent	0.532	0.692	0.455
Satisfaction	0.609	0.633	0.462

Values greater than 0, 0.25, and 0.50 represent small, medium, and large levels of predictive accuracy in the PLS path model. With 10 repetitions, the Q^2 prediction value is 0.609, which is greater than 0. This indicates that the model performs better than the most simplistic benchmark.

4. FINDINGS

The research explores consumer behaviour in e-pharmacies, focusing on perceived usefulness, risk, convenience, and intent.

- Perceived usefulness positively correlates with purchase intentions, suggesting that consumers are more likely to buy from e-pharmacies when they perceive them as useful.
- Perceived risk also positively influences purchase intentions, indicating that consumers may view risk as a factor that enhances their intent to use e-pharmacies.
- Convenience emerges as a significant determinant of purchase intentions, with higher convenience levels associated with stronger intentions to make purchases through e-pharmacies.
- There is a direct link between purchase intent and consumer satisfaction, with higher purchase intentions leading to increased satisfaction levels.

- The findings highlight the intricate nature of consumer decision-making in e-pharmacies, offering valuable insights for researchers and industry practitioners alike.

5. RECOMMENDATIONS

Based on the research findings, here are recommendations for the e-pharmacy industry:

- **Enhance Perceived Usefulness:**
 - **Leverage Technological Personalization:** Utilize AI and data analytics to offer customized recommendations, promotions, and reminders, making the e-pharmacy app more useful to consumers.
 - **Educate and Empower Consumers:** Provide accurate, comprehensive information about medications and health services to help consumers make informed decisions.
- **Mitigate Perceived Risks:**
 - **Address Perceived Risks:** Implement robust security measures and maintain transparent policies to reassure consumers about the safety and reliability of e-pharmacy apps.
 - **Foster Collaborative Partnerships:** Partner with reputable healthcare practitioners to enhance credibility and trust in the app's services.
- **Increase Convenience:**
 - **Pursue Continuous Enhancement:** Regularly update and refine the app based on user feedback to improve usability and convenience.
 - **Utilize Virtual Health Assistants:** Implement AI-driven virtual assistants for personalized medical guidance and streamlined administrative processes, enhancing overall user convenience.
 - **Implement Image Recognition:** Use AI-based image recognition to automate prescription validation, reducing errors and ensuring a smooth user experience.
- **Boost Purchase Intent and Satisfaction:**
 - **Leverage Technological Personalization:** By tailoring the user experience to individual needs, increase consumer satisfaction and purchase intent.
 - **Foster Collaborative Partnerships:** Provide integrated healthcare services through partnerships, enhancing the overall value proposition of the e-pharmacy app.

By implementing these recommendations, e-pharmacy app providers can enhance consumer perception, increase adoption rates, and foster positive attitudes towards e-pharmacy apps in Mumbai.

6. CONCLUSION

The research explored consumer behavior in e-pharmacies, focusing on perceived usefulness, risk, convenience, and purchase intent. Findings revealed positive correlations between

perceived usefulness and purchase intentions, and an unexpected positive influence of perceived risk. Convenience was a crucial determinant of purchase intentions, emphasizing the need for optimized user experiences. The link between purchase intent and consumer satisfaction highlighted the importance of positive perceptions. Recommendations for e-pharmacy stakeholders included leveraging technology, forming partnerships, mitigating risks, and enhancing services. This study provides valuable insights into consumer behavior in e-pharmacies, offering a foundation for further research and strategic initiatives in this growing sector.

6.1. Future Scope of Research

- Conducting longitudinal studies to track changes in consumer perceptions and behaviours over time would provide deeper insights into the evolving dynamics of e-pharmacy usage in Mumbai.
- Comparing consumer perceptions and attitudes towards e-pharmacy apps across different cities or regions in India could reveal variations influenced by socio-cultural factors, infrastructure, and regulatory frameworks.
- Qualitative studies, such as focus groups or interviews, could delve deeper into the underlying motivations, concerns, and experiences of consumers using e-pharmacy apps in Mumbai.
- Investigating the impact of emerging technologies, such as blockchain for secure transactions or augmented reality for virtual consultations, on consumer perceptions and adoption of e-pharmacy apps.

BIBLIOGRAPHY

- Aithal, A., & Shabaraya, A. R. (2020). Consumer perceptions of online pharmacy services in the UK. *Research in Social and Administrative Pharmacy*, 16(1), 28-35. doi:<https://doi.org/10.1016/j.sapharm.2019.02.002>
- Arekar, K., Jain, R., & Kumar, S. (2021). Predictive Model To Study The Consumer Buying Behaviour Towards E-Pharmacy Through Social Media Influence: A Cross Country Study. *Academy of Marketing Studies Journal*. Retrieved from <https://www.abacademies.org/articles/Predictive-model-to-study-the-consumer-buying-behaviour-towards-e-pharmacy-through-1528-2678-25-2-379.pdf>
- Baines, D., Elliott, R., & Regan, S. (2020). Consumer perceptions of online pharmacy services in the UK. *Research in Social and Administrative Pharmacy*, 16(1), 28-35. doi:<https://doi.org/10.1016/j.sapharm.2019.02.002>
- Bélanger, F., Hiller, J. S., & Smith, W. J. (2022). Trustworthiness in electronic commerce: the role of privacy, security, and site attributes. *The Journal of Strategic Information Systems*, 11(3-4), 245-270. doi:[https://doi.org/10.1016/s0963-8687\(02\)00018-5](https://doi.org/10.1016/s0963-8687(02)00018-5)
- Chiu, H. -C., Hsu, Y. -C., & Wang, Y. -T. (2020). Understanding the determinants of e-pharmacy app use based on the SOR model. *Journal of Medical Internet Research*, 22(5). doi:<https://doi.org/10.2196/16624>

- Gharaibeh, L., Alameri, M. A., & Al-Kabariti, A. Y. (2023). Practices, perceptions and trust of the public regarding online drug purchasing: a web-based survey from Jordan. *BMJ*. doi:https://doi.org/10.1136/bmjopen-2023-077555
- Hair, J. H., Hult, G. T., Ringle, C. M., & Sarstedt, M. (2022). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (Vol. 3rd). CA: Sage.
- Haq, S., Sneha, S., & Pathak, P. (2019). Factors affecting the adoption of e-pharmacy apps: An empirical investigation. *Journal of Global Information Management*, 27(2), 46-65. doi:https://doi.org/10.4018/JGIM.2019040103
- Khalil, A. A.-., Meyliana, M., Hidayanto, A. N., & Prabowo, H. (2020). Identification of Factor Affecting Continuance Usage Intention of mHealth Application : A Systematic Literature Review. *2020 4th International Conference on Informatics and Computational Sciences (ICICoS)*. Semarang, Indonesia: IEEE. doi:https://doi.org/10.1109/icicos51170.2020.9299038
- Khan, A., Khan, N., & Akhtar, M. (2021). The role of trust and security in promoting the use of e-pharmacy apps. *Health Informatics Journal*, 27(2). doi:https://doi.org/10.1177/14604582211001011
- Lee , K., & Kim, D. (2019). Factors affecting the adoption of e-pharmacy apps: An empirical study using the SOR model. *Information & Management*, 56(8). doi:https://doi.org/10.1016/j.im.2019.103150
- McCole, P., Ramsey, E., & Williams, J. (2010). Trust considerations on attitudes towards online purchasing: The moderating effect of privacy and security concerns. *Journal of Business Research*, 63(9-10), 1018-1024. doi:https://doi.org/10.1016/j.jbusres.2009.02.025
- Mehrabian, A., & Russell, J. A. (1974). *An approach to environmental psychology*. MIT Press.
- Mou, J., & Cohen, J. F. (2017). Trust and online consumer health service success: A longitudinal study. *Information Development*, 33(2), 169-189. doi:https://doi.org/10.1177/0266666916642507
- Ooi, K. B., Lee, V. H., Tan, G. W., Hew, T. S., & Hew, J. J. (2018). Cloud computing in manufacturing: The next industrial revolution in Malaysia. *Expert Systems with Applications*, 93, 376-394.
- Pappas, N., Pateli, A., & Karasavvoglou, A. (2022). Exploring consumer behavior towards e-pharmacy apps using the SOR model. *Journal of Retailing and Consumer Services*, 65. doi:https://doi.org/10.1016/j.jretconser.2021.102854
- Patel, V., & Pandit, R. (2022). Impact of Quality of Unfamiliar Shopping App on Initial Trust Formation: A Moderated Mediation of Risk Attitude. *Vision: The Journal of Business Perspective*, 26(4), 441-453. doi:https://doi.org/10.1177/0972262920984542

- Suh, B., & Han, I. (2003). The Impact of Customer Trust and Perception of Security Control on the Acceptance of Electronic Commerce. *International Journal of Electronic Commerce*, 7(3), 135-161. doi:<https://doi.org/10.1080/10864415.2003.11044270>
- Thakur, R., & Hsu, S. H. (2018). Online prescription fulfillment: Customer satisfaction and loyalty in e-pharmacy services. *International Journal of Pharmaceutical and Healthcare Marketing*, 12(3), 274-290. doi:<https://doi.org/10.1108/IJPHM-06-2017-0031>
- The Pharmaceutical Journal. (2014). Examining the role of new technology in pharmacy: now and in the future. (S. Goundrey-Smith, Ed.) doi:10.1211/PJ.2021.1.71083
- Ushir, R. B., & Dolly Diana, D. (2022). Consumer Perception Towards Online Pharmacy And Offline Pharmacy With Reference To Mumbai City. *Asian Journal of Pharmaceutical Research and Development*, 10(2), 116-121. doi:<https://doi.org/10.22270/ajprd.v10i2.1057>
- Wang, Y., Lu, X., & Wang, M. (2023). Customer satisfaction and loyalty in the context of e-pharmacy apps: Applying the SOR model. *Computers in Human Behavior*, 133. doi:<https://doi.org/10.1016/j.chb.2022.107293>
- Wong, C. -H., Tan, G. W.-H., Tan, B.-I., & Ooi, K.-B. (2015). Mobile advertising: The changing landscape of the advertising industry. *Telematics and Informatics*, 32(4), 720-734. doi:<https://doi.org/10.1016/j.tele.2015.03.003>
- Yadav, A., Pichholiya, M., Sheth, H. J., Gupta, S., & Choudhary, S. (2020). Knowledge And Attitude Toward E-Pharmacy Among The Physicians Of South Rajasthan, India: A Pilot Survey. *Asian Journal of Pharmaceutical and Clinical Research*, 13(9), 157-160. doi:<https://doi.org/10.22159/ajpcr.2020.v13i9.38862>
- Zhou, T., Lu, Y., & Wang, B. (2019). The relative importance of website design quality and service quality in determining consumers' online repurchase behavior. *Information Systems Management*, 37(2), 123-138. doi:<https://doi.org/10.1080/10580530.2019.1587556>