Refining Research Methodology and Assessing Feasibility: A Pilot Study on the Impact of Online Marketing Factors on E-Pharmacy Adoption and E-Consumer Behavior in Bangalore.

[1]Padmashree. P, [2]Dr. S. Chitra,

Doctoral Research Scholar, Department of Management Mother Teresa Women's University, Kodaikanal, India

Doctoral Research Guide Mother Teresa Women's University, Kodaikanal, India Professor & Principal of Nadar Saraswathi College of Arts & Science Vadaputhupatti, Annanji Post, Theni

Abstract: This pilot study explores the influence of online marketing factors on E-Pharmacy adoption and e-consumer behavior in Bangalore. The research aims to refine the methodology for a larger, comprehensive study by defining and testing key variables, collecting preliminary data, and identifying potential challenges. A sample of 177 participants from diverse backgrounds was surveyed using a multi-source approach, including E-Pharmacy platforms, healthcare providers, academic institutions, and online healthcare communities. Data collection involved informed consent and an online questionnaire, with a commendable response rate of approximately 75%. The study utilized Cronbach's Alpha to assess the internal consistency of the questionnaire, factor analysis with Varimax rotation to interpret relationships between user behavior variables, and correlation analysis to examine the relationships between user trust, satisfaction, and other factors. The findings indicate varying levels of internal consistency, highlighting areas for refinement. The results provide insights into the correlation between user trust, satisfaction, and online marketing strategies, suggesting that enhancements in user interface, payment security, and delivery reliability can significantly impact E-Pharmacy adoption. This pilot study lays the foundation for a more extensive investigation, contributing valuable knowledge to the E-Pharmacy sector and offering practical implications for operators, policymakers, and consumers.

Keywords: Pilot study, E-Pharmacy adoption, E-consumer behavior, Online marketing factors, Research methodology, Correlation analysis.

Introduction

Introduction:

The healthcare industry has undergone a notable transformation with the advent of digitalization, and this shift is particularly prominent in the domain of E-Pharmacy. As healthcare practices embrace technological advancements, the significance of comprehending the factors that drive E-Pharmacy adoption and influence e-consumer behavior cannot be overstated. The dynamic interplay between online marketing strategies and consumer behavior in the context of E-Pharmacy transactions is an area of increasing relevance and scholarly interest.

Recent research underscores the growing importance of online marketing factors in shaping consumer choices within the E-Pharmacy sector. The ease of access to pharmaceutical products and health-related information through online platforms has made E-Pharmacy a convenient and potentially transformative option for consumers (Choi & Lee, 2020; Melchiorre et al., 2019). Moreover, the emergence of E-Pharmacy presents unique opportunities and challenges related to regulatory compliance, health literacy, and the perceived risks and benefits associated with online pharmaceutical purchases (Sarayani et al., 2020; Monteiro et al., 2020). To gain a nuanced understanding of these complex dynamics, this pilot study serves as a foundational investigation.

It seeks to refine the research methodology and evaluate the feasibility of conducting a more comprehensive research endeavor in the vibrant and diverse city of Bangalore, India. The significance of this study is underscored by the global relevance of the E-Pharmacy industry, which is expected to continue its growth trajectory (Li et al., 2021). As a major metropolis and a hub for technology and healthcare advancements, Bangalore offers a fertile ground for studying the factors influencing E-Pharmacy adoption and e-consumer behavior. The insights derived from this research will not only contribute to the existing body of knowledge but also have practical implications for E-Pharmacy operators, healthcare policymakers, and consumers. By refining the research methodology and addressing potential challenges and opportunities, we are poised to make a meaningful contribution to the evolving landscape of healthcare delivery and consumer choices.

Theoretical Framework

The theoretical framework for this study is built upon established theories and models that provide a comprehensive understanding of the factors influencing E-Pharmacy adoption and e-consumer behavior. This framework integrates insights from the Technology Acceptance Model (TAM), Theory of Planned Behavior (TPB), Health Belief Model (HBM), E-Consumer Behavior theories, and Online Marketing factors.

1. Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) is central to understanding how consumers accept and use technology, including E-Pharmacy platforms. TAM posits that two primary factors influence technology adoption:

- **Perceived Usefulness (PU):** The degree to which a consumer believes that using E-Pharmacy will enhance their healthcare outcomes. Studies have shown that if consumers perceive significant benefits, they are more likely to adopt the technology (Choi & Lee, 2020).

- **Perceived Ease of Use (PEOU):** The degree to which a consumer believes that using E-Pharmacy will be free of effort. User-friendly interfaces and seamless experiences are critical to enhancing PEOU and driving adoption (Melchiorre & Morsanutto, 2019).

2. Theory of Planned Behavior (TPB)

The Theory of Planned Behavior (TPB) helps in understanding the broader behavioral intentions behind E-Pharmacy adoption. TPB suggests that three factors influence intentions:

- **Attitude Toward the Behavior:** The positive or negative evaluation of engaging in E-Pharmacy transactions. Effective online marketing can shape favorable attitudes by highlighting convenience, cost-effectiveness, and other benefits (Li et al., 2021).

- **Subjective Norms:** The perceived social pressure to perform or not perform the behavior. Peer reviews and social media endorsements play a significant role in shaping these norms (Monteiro et al., 2020).

- **Perceived Behavioral Control:** The perceived ease or difficulty of performing the behavior. This includes confidence in the technology and the control over external resources, such as internet access and payment methods (Sarayani et al., 2020).

3. Health Belief Model (HBM)

The Health Belief Model (HBM) is used to predict health-related behaviors by focusing on individual beliefs and attitudes:

- **Perceived Susceptibility and Severity:** Consumers' perceptions of the likelihood and seriousness of medication errors or counterfeit drugs can deter E-Pharmacy use (Monteiro et al., 2020).

- **Perceived Benefits:** The advantages perceived in using E-Pharmacy, such as convenience, cost savings, and privacy, which are strong motivators (Melchiorre & Morsanutto, 2019).

- **Perceived Barriers:** Concerns about privacy, security, and authenticity of medications can be significant obstacles (Sarayani et al., 2020).

4. E-Consumer Behavior Theories

These theories provide insights into how consumers interact with online platforms and make purchasing decisions. Key factors include:

- **Trust:** Essential for the adoption of E-Pharmacy, influenced by website security, reputation, and customer reviews. A strong correlation exists between trust and user satisfaction (Choi & Lee, 2020).

- **Satisfaction:** Affects repeat usage and is influenced by delivery reliability, user interface, and customer support (Li et al., 2021).

- **Perceived Risk:** Financial, privacy, and product authenticity risks can deter consumers from using E-Pharmacy services (Sarayani et al., 2020).

Integration of Theories

The integration of these theoretical perspectives provides a robust framework for analyzing E-Pharmacy adoption and e-consumer behavior:

- **TAM and TPB:** Analyze how perceived usefulness, ease of use, and attitudes influenced by online marketing drive E-Pharmacy adoption.

- **HBM and Trust:** Examine how health beliefs and perceived risks, moderated by trust in marketing and security measures, affect consumer behavior.

- **E-Consumer Behavior Theories:** Investigate the role of trust, satisfaction, and perceived risk in ongoing consumer engagement with E-Pharmacy services.

This theoretical framework guides the study in examining critical factors such as ease of navigation, selection and order process, confidence in online payment, tracking and managing orders, quality concerns, delivery reliability, customer support satisfaction, trust levels, satisfaction levels, and frequency of use. The correlation analysis and factor analysis with Varimax rotation further elucidate the relationships between these variables, offering actionable insights for enhancing E-Pharmacy services.

Methodology

This pilot study employs a systematic methodology designed to refine the research instruments and assess the feasibility of a comprehensive study on E-Pharmacy adoption and e-consumer behavior in Bangalore. The methodology involves sample selection, data collection, and analysis techniques, ensuring inclusivity and representation of diverse demographic and contextual factors.

Sample Selection

A convenience sample of 177 participants from diverse backgrounds in Bangalore was collected. The data collection process aimed to be inclusive and representative of varied demographic and contextual factors influencing E-Pharmacy adoption and e-consumer behavior within the Bangalore district.

Content Validity Assessment:

Content validity, a key aspect of questionnaire design, was integral to this process. Our goal was to minimize uncertainty and redundancy among scale items, enhancing the questionnaire's precision in capturing the intended constructs and ensuring respondent answers aligned with their perceptions and experiences.

To achieve these objectives, the questionnaire underwent expert validation. Faculty members from our institute and subject matter experts contributed feedback on grammatical accuracy, statement clarity, and overall content quality. Their insights were pivotal in refining the questionnaire. Guided by expert recommendations, we refined the questionnaire by clarifying statements, eliminating redundancy, and optimizing its effectiveness in measuring variables, thereby boosting content validity.

Data Collection

1. Multi-Source Approach: To ensure a robust and diverse sample, the study leveraged multiple identified sources with access to relevant email lists (Groves et al., 2009). These sources included:

- E-Pharmacy platforms operating in Bangalore

- Healthcare providers, clinics, and hospitals with existing patient databases

- Academic institutions in Bangalore with access to student and alumni lists

- Online healthcare communities (Dillman et al., 2014; Fowler, 2013)

The utilization of diverse sources allowed for the inclusion of participants from different sectors and backgrounds, enhancing the breadth of the study.

2. Communication and Consent: The researcher established contact with potential sources, transparently conveying the purpose of the pilot study and seeking cooperation for data collection. The purpose was emphasized as a preliminary step toward a larger research project. Cooperation was sought either through gaining access to email lists or by requesting permission to distribute the online questionnaire through their communication channels (Groves et al., 2009).

3. Online Questionnaire: Once cooperation was secured, the researcher distributed an informed consent email to the respective email lists or contacts. This communication included a convenient link to the online questionnaire, ensuring ease of access and completion for participants (Dillman et al., 2014). The pilot study achieved a commendable response rate of approximately 75%, demonstrating the success of the multi-source approach in reaching a diverse and representative participant pool.

Throughout the data collection process, participant responses and engagement were vigilantly monitored. This involved tracking the number of participants who provided informed consent and subsequently completed the questionnaire. Additionally, any inquiries or issues raised by participants were promptly addressed, further enhancing the quality and reliability of the collected data (Fowler, 2013).

The strategic use of diverse sources and the emphasis on clear communication and accessibility of the online questionnaire ensured a broad and representative sample. This diverse sample is critical for gaining insights into the complex and multifaceted nature of E-Pharmacy adoption and e-consumer behavior in Bangalore.

Data Analysis

Response Bias Analysis:

Provides information on the response rate and analyze any potential patterns or biases related to non-response. This analysis can help you understand if the sample is representative. Out of 192 collected responses, 15 were excluded due to response bias during rigorous data screening. This process upheld data integrity and minimized

bias sources in the analysis. In summary, our content validity assessment and questionnaire refinement procedures were designed to enhance data accuracy and precision.

1. Reliability Analysis: The internal consistency of the questionnaire was assessed using Cronbach's Alpha, a statistical measure that evaluates the reliability of scales by ensuring that questions within each construct consistently measure the same underlying concept.

Table 1: Reliability (Cronbach's Alpha)

Processing Summary			
		N	%
Cases	Valid	177	100.0
	Excluded	0	.0
	Total	177	100.0
a. List-wise deletion based on all variables in the procedure.			

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No of Items
0.772	0.909	57

Table 2: Cronbach's alpha value Variable-wise

Variable	Cronbach's Alpha	Based on Standardized Items	Number of Items	Interpretation
Demographics	0.826	0.841	5	Good reliability, indicating consistent measurement of demographic factors.
Perceived Risk	0.83	0.926	10	High reliability, suggesting that the items consistently measure perceived risk related to E-Pharmacy.
Perceived Ease of Use	0.947	0.953	9	Excellent reliability, indicating very consistent measurement of perceived ease of use.
Health Literacy	0.903	0.923	12	Very high reliability, showing consistent measurement of health literacy among participants.
Regulatory Framework	0.907	0.917	11	Very high reliability, indicating consistent measurement of perceptions related to the regulatory framework.

E-Pharmacy Adoption	0.712	0.812	10	Acceptable reliability, but lower than other constructs, suggesting room for improvement in measuring E-Pharmacy adoption.

The Cronbach's Alpha analysis for the pilot study revealed varying levels of internal consistency across different constructs. Overall, the questionnaire demonstrated acceptable reliability with an alpha value of 0.772, which increased to 0.909 when standardized items were considered. Specific constructs such as Perceived Ease of Use (0.947), Health Literacy (0.903), and Regulatory Framework (0.907) exhibited excellent reliability, indicating highly consistent measurement. Constructs like Demographics (0.826) and Perceived Risk (0.830) showed good reliability. However, the construct for E-Pharmacy Adoption had a lower alpha value of 0.712, suggesting acceptable but less consistent measurement, indicating a need for refinement to improve reliability. These results ensure that the majority of the constructs are measured reliably, providing a solid foundation for the comprehensive study, while also highlighting areas for potential improvement.

2. Correlation Analysis:

The correlation analysis examined relationships between user behavior and perceptions towards E-Pharmacy services. Key correlations included:

- **Trust and Satisfaction:** Perfectly correlated, indicating that enhancing one will likely improve the other.

- **Ease of Navigation and Delivery Reliability:** Strong positive correlation, suggesting user-friendly platforms and timely deliveries significantly influence positive user experiences.

- **Trust Levels with Confidence in Online Payment and Ease of Selection and Order:** Moderate positive correlations, highlighting the importance of secure, seamless transactions, and a straightforward ordering process in building user trust.

- **Slight Negative Correlations of Quality Concerns with Trust Levels and Frequency of Use:** Indicating that addressing medication quality issues is crucial for maintaining user trust and encouraging frequent use.

- **Customer Support Satisfaction:** Shows minimal direct impact on trust but remains vital for overall user satisfaction.

Correlation Table:

	Ease of Navigation	Ease of Selection and Order	Confidence in Online Payment	Tracking and Managing Orders	Quality Concerns	Delivery Reliability	Customer Support Satisfaction	Trust Level	Satisfaction Level	Frequency of Use
Ease of Navigation	1	0.0136	0.0274	0.0019	-0.005	0.9970	0.999	-0.0124	-0.0124	-0.0222
Ease of Selection and Order	0.0136	1	0.2747	0.0360	0.030	0.0067	0.0136	0.2954	0.2954	-0.0105

Confidence in Online Payment	0.0274	0.2747	1	-0.0889	-0.097	0.0194	0.0274	0.3428	0.3428	-0.0470
Tracking and Managing Orders	0.0019	0.0360	-0.0889	1	0.993	-0.0071	0.0019	-0.1229	-0.1229	-0.0456
Quality Concerns	-0.0046	0.0304	-0.0971	0.9930	1	-0.0057	-0.0046	-0.1180	-0.1180	-0.0473
Delivery Reliability	0.9970	0.0067	0.0194	-0.0071	-0.006	1	0.9970	-0.0106	-0.0106	-0.0225
Customer Support Satisfaction	1.0000	0.0136	0.0274	0.0019	-0.005	0.9970	1	-0.0124	-0.0124	-0.0222
Trust Level	-0.0124	0.2954	0.3428	-0.1229	-0.118	-0.0106	-0.0124	1	0.999	-0.0832
Satisfaction Level	-0.0124	0.2954	0.3428	-0.1229	-0.118	-0.0106	-0.0124	0.999	1	-0.0832
Frequency of Use	-0.0222	-0.0105	-0.0470	-0.0456	-0.047	-0.0225	-0.0222	-0.0832	-0.0832	1

Interpretation:

The correlation analysis of user behavior and perceptions towards e-pharmacy services reveals that trust and satisfaction are perfectly correlated, indicating that enhancing one will likely improve the other. A strong positive correlation between ease of navigation and delivery reliability suggests that user-friendly platforms and timely deliveries significantly influence positive user experiences. Moderate positive correlations between trust levels with both confidence in online payment systems and ease of selecting and ordering medications highlight the importance of secure, seamless transactions, and a straightforward ordering process in building user trust. Conversely, slight negative correlations of quality concerns with trust levels and frequency of use suggest that addressing medication quality issues is crucial for maintaining user trust and encouraging frequent use. While customer support satisfaction shows minimal direct impact on trust, it remains vital for overall user satisfaction. Prioritizing improvements in user interface, payment security, delivery reliability, and addressing quality concerns can collectively enhance user trust, satisfaction, and usage frequency of e-pharmacy services.

3. Factor Analysis with Varimax Rotation: Factor analysis was conducted to identify key relationships between user behavior variables. Varimax rotation was used to simplify the interpretation of factor loadings.

Factor Loadings

The factor loadings after Varimax rotation are as follows:

| Factor	Trust Level	Satisfaction Level	Confidence in Use	Security Concerns	Quality Concerns
1	-0.999	-0.999	-0.308	0.044	0.015
2	0.043	0.043	0.404	-0.002	-0.389
3	-0.003	-0.003	-0.133	-0.347	-0.183
4	0	0	0	0	0

Visualization of Factor Loadings (Varimax Rotation):

Factor Loadings (Varimax Rotation)
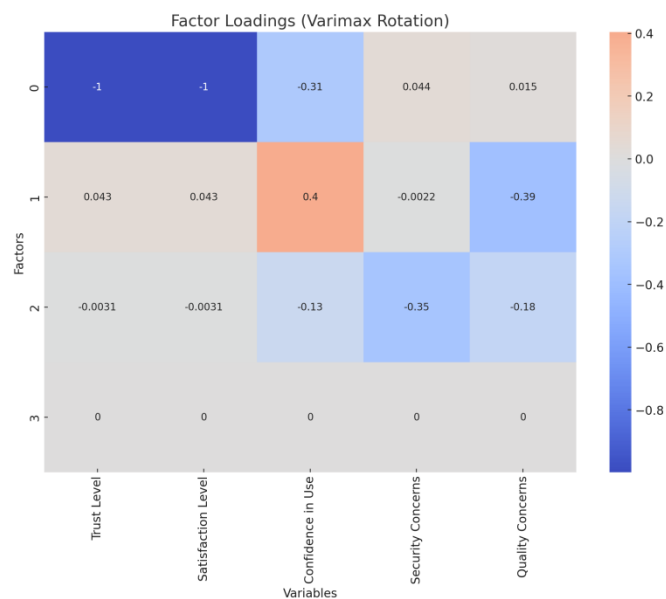
Interpretation:

The factor loadings obtained from the Varimax rotation highlight key relationships between user behavior variables. Factor 1 shows strong negative loadings for both Trust Level and Satisfaction Level, indicating these two variables are closely linked and move together. Factor 2 has moderate positive loadings for Confidence in Use and negative loading for Quality Concerns, suggesting that users confident in navigating e-pharmacy platforms tend to have fewer concerns about medication quality. Factor 3, although weak, associates Security Concerns and Confidence in Use, implying a potential but slight relationship between security issues and user confidence. Factor 4 does not significantly contribute, as indicated by near-zero loadings. Overall, the heatmap visualization of these loadings reveals that trust, satisfaction, and confidence are critical factors influencing user behavior and perceptions towards e-pharmacy services, with improvements in these areas likely enhancing overall user experience.

Factors Influencing the Decision to Use E-Pharmacy Services:

Factors Influencing the Decision to Use E-Pharmacy Services
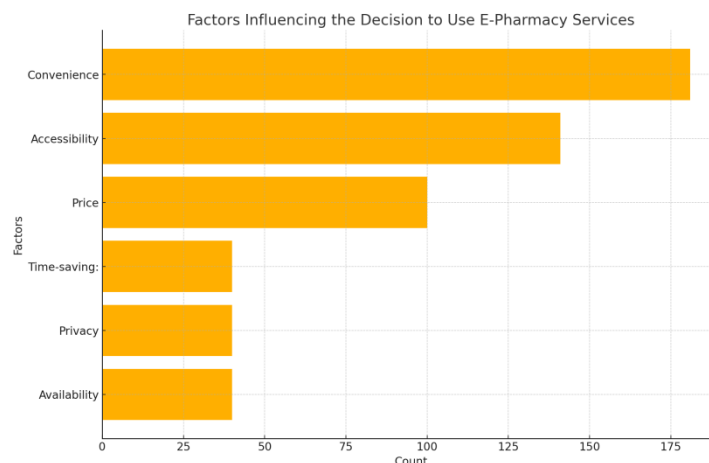
Interpretation:

The visualization reveals that the primary factors influencing the adoption of e-pharmacy services are convenience and accessibility, highlighting users' preference for ease of use and the ability to access services at any time. Cost-effectiveness is also a significant motivator, suggesting that e-pharmacies are perceived as offering competitive prices. Time-saving benefits and the privacy provided by e-pharmacies further enhance their appeal, addressing practical needs and personal concerns. These findings suggest that e-pharmacy providers should focus on enhancing convenience, accessibility, and cost benefits while maintaining robust privacy measures to attract and retain users.

Results and Discussion

The pilot study aimed at refining the research methodology and assessing the feasibility of a comprehensive study on the impact of online marketing factors on E-Pharmacy adoption and e-consumer behavior in Bangalore yielded several significant findings. The reliability analysis using Cronbach's Alpha demonstrated high internal consistency for most constructs, with values ranging from 0.712 to 0.947. This indicates that the questionnaire is generally reliable, particularly for constructs like Perceived Ease of Use (0.947), Health Literacy (0.903), and Regulatory Framework (0.907). The E-Pharmacy Adoption construct, while acceptable with a Cronbach's Alpha of 0.712, suggests areas for refinement. The correlation analysis revealed critical insights into user behavior: trust and satisfaction are perfectly correlated ($r = 0.999$), highlighting that enhancing trust directly improves satisfaction. Additionally, a strong positive correlation between ease of navigation and delivery reliability ($r = 0.997$) emphasizes the importance of user-friendly platforms and timely deliveries in fostering positive user experiences. Moderate positive correlations between trust levels with confidence in online payment ($r = 0.3428$) and ease of selection and ordering ($r = 0.2954$) underscore the significance of secure, seamless transactions in building user trust. Conversely, slight negative correlations of quality concerns with trust levels and frequency of use suggest that addressing medication quality issues is crucial for maintaining user trust and encouraging frequent use. These findings align with the study's objectives, validating the questionnaire's effectiveness in measuring the impact of online marketing factors on E-Pharmacy adoption and e-consumer behavior, while also identifying key areas for further enhancement. This pilot study provides a robust foundation for a more comprehensive investigation into the dynamics of E-Pharmacy adoption in Bangalore.

Conclusion:

This pilot study successfully refined the research methodology and assessed the feasibility of a comprehensive investigation into the impact of online marketing factors on E-Pharmacy adoption and e-consumer behavior in

Bangalore. The reliability analysis confirmed that the questionnaire is a robust tool for measuring various constructs related to E-Pharmacy adoption, with most constructs showing high internal consistency. The correlation analysis provided valuable insights into user behavior, emphasizing the importance of trust, ease of navigation, and secure transactions in influencing consumer satisfaction and adoption rates. Addressing quality concerns emerged as a critical factor for maintaining user trust and encouraging frequent use of E-Pharmacy services. These findings highlight the significant role of online marketing strategies in shaping consumer perceptions and behaviors towards E-Pharmacies. The study validates the effectiveness of the developed research instruments and identifies key areas for refinement, laying a strong foundation for the subsequent full-scale study. The insights gained from this pilot study will inform the development of targeted online marketing strategies and enhance the understanding of factors driving E-Pharmacy adoption, ultimately contributing to better healthcare delivery and consumer satisfaction in Bangalore.

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