RESEARCH PAPER

Omnichannel Retailing: Bridging the Gap Between Online and Offline Experience with Reference to Pharma Products

Saurabh Mishra[1], Nitin Kulshrestha[2], Ketki V. Naik[3], Bansi S. Pandya[4], Poonam Patel[5], Shivam Shukla[6]

[1] Assistant Professor, PIBA, Parul University, Vadodara, Gujarat, India. Email: dr.smishra.net@gmail.com
[2] Assistant Professor, PIBA, Parul University, Vadodara, Gujarat, India. Email: nitin_kulshrestha@yahoo.com
[3] Assistant Professor, PIBA, Parul University, Vadodara, Gujarat, India. Email: ketkimanekar@yahoo.co.in
[4] Assistant Professor, PIBA, Parul University, Vadodara, Gujarat, India. Email: bansripandya167@gmail.com
[5] Assistant Professor, PIBA, Parul University, Vadodara, Gujarat, India. Email: poonam.imbhu@gmail.com
[6] Assistant Professor, PIBA, Parul University, Vadodara, Gujarat, India. Email: drshivam@outlook.in

ABSTRACT

Rapid digitalization in the healthcare sector and in pharmacy retail in India is leading to an increase in the use of omnichannel retail strategies that integrate digital channels, including e-pharmacy websites and mobile applications, with existing physical channels such as retail pharmacies, hospital pharmacies, and laboratories. This study empirically evaluates customer experience aspects in omnichannel retailing, specifically in pharmaceuticals, to determine how omnichannel integration affects purchase satisfaction among customers. The study draws on the SERVQUAL and UTAUT2 models in its analysis of omnichannel integration and customer purchase experience. A quantitative survey was conducted among 340 users of pharmaceutical products in Gujarat, India. This study analyzes six constructs, namely Omnichannel Integration Perception (OIP), Online Channel Experience (OCE), Offline Channel Experience (OFCE), Channel Switching Convenience (CSC), Trust and Perceived Safety (TPS), and Customer Purchase Satisfaction (CPS). The results of multiple regression analysis indicate that the entire model accounted for 66.0% of CPS variability [$F(5, 334) = 129.67$, $p < .001$] with OIP ($\beta = 0.321$) and TPS ($\beta = 0.264$) being the best predictors. A one-way ANOVA test revealed that customers who use omnichannel marketing channels experience significantly greater purchase satisfaction ($M = 4.02$) than both online and offline customers ($M = 3.48$ & $M = 3.31$) [$F(2, 337) = 47.82$, $p < .001$]. In addition, chi-square analysis revealed that there was a statistically significant relationship between channel choice and level of trust [$\chi^2(4) = 61.47$, $p < .001$]. All seven hypotheses were supported. This study highlights the importance of having trust-driven omnichannel structures without any conflict between online and offline customer interaction points.

Keywords: Omnichannel Retailing, Pharma Retail, E-Pharmacy, Online Offline Integration, Customer Experience, Purchase Satisfaction, SERVQUAL, UTAUT2, Gujarat, Digital Health

How to cite this article: Mishra S, Kulshrestha N, Naik K V, Pandya B S, Patel P, Shukla S. Omnichannel Retailing: Bridging the Gap Between Online and Offline Experience with Reference to Pharma Products. Int J Drug Deliv Technol. 2026;16(37s): 851-860. DOI: 10.25258/ijddt.16.37s.110

Source of support: Nil.

Conflict of interest: None

1. Introduction

However, it is imperative to note that there is a unique feature about the pharmaceutical industry as compared to other industries in the consumer sector: pharmaceutical goods are distinguished with features such as necessity, regulations, patient safety, and asymmetric information among sellers and buyers. The global pharmacy retail business is currently experiencing an entirely new wave of evolution on the back of several factors, including digitalisation, consumer behavior change, and the increased adoption of e-health services post the pandemic [1]. According to one estimate, India's e-pharmacy market will be worth USD 18.6 billion by 2030 and grow at a CAGR of around 22.5% [2].

The integration of multiple consumer interaction points into one cohesive retail process in order to provide a seamless experience is an essential model in this transition [3]. The distinction between multichannel retailing and omnichannel retailing is that in the latter case, it guarantees synchronization between various

online portals, physical stores, telemedicine platforms, and the entire logistics network [4]. This becomes especially crucial in the context of the pharmacy industry since patients with a chronic condition need to have all the information and reminders about their medications regardless of how they interact with the pharmacists.

Although the application of pharma omnichannel retail has increased significantly in recent years, there has not been much empirical research conducted to date, especially when looking at the scenario in India or that of the state of Gujarat. Almost all previous literature on this topic has been related to FMCGs or fashion retail [5]. Little literature is available which relates to this topic in the pharmaceutical sector, including issues of regulation and security [6].

Considering that the State of Gujarat is India's leading manufacturer of medicines, accounting for more than 40% of the country's manufacturing capacity, with industrial clusters in Ahmedabad, Vadodara, Vapi, and Ankleshwar, it becomes all the more relevant for such research to be conducted in Gujarat [7]. The consumers in Gujarat find themselves being exposed to not just offline but also online health care options.

1.1 Research Objectives

1. To examine the impact of omnichannel integration perception on customer purchase satisfaction in pharma retailing.
2. To evaluate the influence of online and offline channel experiences on customer purchase satisfaction.
3. To assess the role of channel switching convenience and trust and perceived safety as determinants of pharma omnichannel purchase satisfaction.
4. To compare purchase satisfaction levels across single-channel (online-only / offline-only) and omnichannel pharma consumers.
5. To analyse the association between channel preference and consumer trust in online pharmaceutical purchases.

2. Literature Review

2.1 Omnichannel Retailing: Conceptual Foundations

The notion of omnichannel retailing was introduced for the first time by Rigby [8], who defined this type of retailing differently from multi-channel models by stressing that all shopping channels need to be integrated seamlessly and based on the customer. According to Verhoef et al. [9], the omnichannel experience is defined as the situation when consumers perceive the brand consistently regardless of the channel through which they interact. According to Beck and Rygl [10], a typology was suggested dividing multichannel retailing into full integration, partial integration, and non-integration types, while omnichannel represents full integration.

Further studies have found that omnichannel approaches enhance customer loyalty, satisfaction, and lifetime value [11]. According to Herhausen et al., an omnichannel approach leads to a traffic reciprocity effect, resulting in increased conversion rates for e-commerce transactions and higher foot traffic for brick-and-mortar stores [12]. However, these observations have not been extensively documented within the context of pharmaceutical retailing.

2.2 Digital Transformation in Pharmaceutical Retail

Regulation surrounding the practice of pharmaceutical commerce on the internet in India, especially regarding the Drugs and Cosmetics Act (1940), its amendments, and guidelines for e-pharmacies released in 2018, have traditionally acted as a barrier for fast development [13]. The COVID-19 outbreak, however, acted as a structure-accelerator, where there was a sharp increase in telemedicine consultations, and e-pharmacies such as Netmeds, PharmEasy, Tata 1mg, and Apollo Pharmacy became widely popular [14].

Chahal et al. [15] studied the usage of e-pharmacies by consumers in India and found that ease of use, convenience of time, and drug price comparisons were the key adoption factors. On the other hand, fears about counterfeits, fake prescriptions, privacy issues, and lack of pharmacist counseling continued to be critical obstacles to adoption [16]. Goyal and Bhatt [17] discovered that trust, especially institutional trust for regulatory compliance and product authenticity, was the main factor influencing repurchase behavior in e-pharmacy settings in India.

2.3 Customer Experience in Omnichannel Pharma Retail

Customer experience in omnichannel contexts has been theorised as encompassing cognitive, affective, behavioural, and social dimensions across all channel interactions [18]. In pharmaceutical retail, the experience framework is additionally conditioned by health literacy, the urgency of medication need, and the emotional stakes associated with chronic disease management [19]. Akter and Wamba [20] identified that channel consistency — the degree to which service quality, pricing, and product

information remain uniform across channels — is a critical antecedent of omnichannel satisfaction.

Channel switching convenience is a relatively understudied topic when it comes to pharmacy products. According to Shi et al., perceived switching costs between virtual and brick-and-mortar retailing influence consumer purchase satisfaction, especially when older individuals are involved since they might be more comfortable with face-to-face communication with pharmacists for complicated drug regimens [21]. This ties into the UTAUT2 framework's notion of facilitating conditions, whereby consumers need proper means to change their behaviors through technology [22].

2.4 Trust, Safety, and Regulatory Compliance in E-Pharmacy

Trust has been acknowledged as the basic building block in the adoption of e-commerce in the pharmaceutical industry [23]. In contrast to normal e-commerce, which considers issues of payment safety and product quality, pharmaceutical trust also considers regulatory compliance (licensed platform), authenticity of products (no fake medicines), prescription handling issues, and cold chain management (temperature-sensitive drugs) [24]. The work of Pavlou and Fygenson [25] showed that technology trust and institutional trust contribute to e-commerce behavior intention.

In healthcare retailing, Kumar & Reinartz [6] have expanded on this approach by contending that both physical safety (quality of drug) and informational safety (privacy of data) are aspects of perception that need to be treated as an independent variable equal in importance to trust. It is from this theoretical perspective that the TPS construct has been developed for the current research.

2.5 Research Gap

An extensive literature review indicates that although the concept of omnichannel retailing in generic retailing has received significant attention, empirical research on omnichannel customer experience in the context of pharmaceutical retailing, especially in the Indian scenario, is still in its infancy. Prior research in this area has independently investigated either the use of e-pharmacies [15], [17] or omnichannel strategies [9], [11], without incorporating pharma-related variables like regulatory trust, prescription handling, and switching flexibility between channels.

3. Theoretical Framework and Hypotheses

In this study, a combination of two theories is used. The first one is the SERVQUAL theory, where service quality is defined based on the discrepancy between the expected performance and customer perception regarding five dimensions of service quality (reliability, assurance, tangibility, empathy, and responsiveness). The second theory is the UTAUT2 framework, which explains technological adoption through seven constructs, including performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, and habits.

H1: Omnichannel integration perception (OIP) significantly and positively influences customer purchase satisfaction (CPS) in pharma retailing.

H2: Online channel experience (OCE) positively and significantly influences customer purchase satisfaction in pharma omnichannel retailing.

H3: Offline channel experience (OFCE) positively and significantly influences customer purchase satisfaction in pharma omnichannel retailing.

H4: Channel switching convenience (CSC) positively and significantly influences customer purchase satisfaction in pharma omnichannel retailing.

H5: Trust and perceived safety (TPS) significantly influence customer purchase satisfaction with pharma products across channels.

H6: Omnichannel pharma consumers report significantly higher purchase satisfaction compared to single-channel (online-only or offline-only) consumers.

H7: There is a significant association between channel preference and level of trust in online pharmaceutical purchasing.

4. Research Methodology

4.1 Research Design

Quantitative, descriptive cross-sectional survey design was used. The positivist paradigm and the deductive research approach would be best suited for this research as it is based on the hypothesis-testing approach.

4.2 Population, Sampling, and Data Collection

The target population included adults aged 18 years and above who were living in Gujarat state and had purchased any form of pharmaceutical product through any retail outlet (pharmacy, online portal, or both) within the last 12 months. The sampling procedure used included non-probability purposive sampling and snowball sampling. The data collection process was carried out during February to April 2025, using structured surveys that were administered either online (through WhatsApp groups, pharmacy waiting rooms, and hospital OPD) or offline (in retail pharmacy chains and community health centers in cities of Ahmedabad,

Vadodara, Surat, Rajkot, and Bharuch). From the total number of 390 distributed questionnaires, 351 were received back, but 11 of these contained missing information, and hence 340 questionnaires were retained as valid questionnaires (response rate: 87.2%).

4.3 Measurement Instrument

The questionnaire consisted of two parts. Part A collected demographic information and channel usage profiling data, while part B consisted of 30 Likert scale questions (ranging from 1=Strongly Disagree to 5=Strongly Agree) that reflected the six constructs used in this study. All the questionnaire items were drawn from other scales used in previous studies: OIP scale was developed based on the works by Verhoef et al. [9]; OCE & OFCE scale based on the work by Herhausen et al. [12]; CSC scale was adopted from Shi et al. [21]; TPS scale was adopted from Pavlou and Fygenson [25] & Kumar and Reinartz [6]; and CPS scale was developed by Parasuraman et al. [26].

4.4 Analytical Methods

IBM SPSS Statistics software (Version 27) was employed for data analysis. The analysis process involved: (i) descriptive statistics and checking for normal distribution; (ii) Cronbach's alpha to check for reliability; (iii) Pearson bivariate correlation to assess relationships between constructs; (iv) multiple regression analysis for testing H1-H5; (v) one way ANOVA with post-hoc Tukey's HSD test to test H6; and (vi) Pearson Chi-square test with effect size Cramer's V to test H7.

4.5 Ethical Considerations

Participation in the study was entirely voluntary. Written informed consent was obtained before data collection commenced. Neither any confidential patient nor any prescription information was recorded. The study adhered to ethical standards set out by the PIBA institutional research committee and those established by the Declaration of Helsinki.

5. Data Analysis and Results

5.1 Demographic and Channel-Use Profile

Age and gender-wise distribution of the 340 respondents is shown in Table 1. Respondents showed an almost equal proportion between genders, with 50.3% female and 47.6% males. Age group of 26-35 was prevalent in the sample at 35%. This matched well with the profile of individuals adopting digital health technology in India. Highest percentage (48.2%) was graduates. Most importantly, 55.3% were omnichannel pharma consumers, 26.2% were offline pharma users only, and 18.5% were online pharma users only.

Table 1: Demographic and Channel-Use Profile of Respondents (N = 340)

Variable	Category	Frequency (n = 340)
Gender	Male	162 (47.6%)
	Female	171 (50.3%)
	Non-Binary / Prefer not to say	7 (2.1%)
Age Group	18–25 years	88 (25.9%)
	26–35 years	119 (35.0%)
	36–50 years	94 (27.6%)
	Above 50 years	39 (11.5%)
Education	Secondary / HSC	52 (15.3%)
	Graduate	164 (48.2%)
	Postgraduate & Above	124 (36.5%)
Occupation	Student	74 (21.8%)
	Employed (Private/Govt.)	156 (45.9%)
	Self-Employed / Business	71 (20.9%)
	Homemaker / Retired	39 (11.4%)
Pharma Purchase Channel Used	Only Offline (pharmacy/hospital)	89 (26.2%)
	Only Online (app/website)	63 (18.5%)
	Both (Omnichannel)	188 (55.3%)

5.2 Reliability Analysis

The alpha values for the six constructs have been included in Table 2. The minimum acceptable value of 0.70 [29] was surpassed by all the constructs, with Customer Purchase Satisfaction having the highest reliability value (α = 0.906, Excellent). Another construct that scored very high on the reliability test was Trust (α = 0.889).

Table 2: Reliability Statistics — Cronbach's Alpha

Construct	Items	Cronbach's α	Interpretation
Omnichannel Integration Perception (OIP)	5	0.873	Good
Online Channel	5	0.858	Good

Experience (OCE)			
Offline Channel Experience (OFCE)	5	0.841	Good
Channel Switching Convenience (CSC)	4	0.862	Good
Trust and Perceived Safety (TPS)	5	0.889	Good
Customer Purchase Satisfaction (CPS)	6	0.906	Excellent

5.3 Descriptive Statistics

The descriptive statistics of all six constructs are provided in Table 3 below. The constructs "Trust" and "Perceived Safety" achieved the highest mean score (M = 3.92, SD = 0.694) due to the critical importance of issues related to security in the purchase of medications. Omnichannel Integration Perception was not far from being the second-highest mean scorer (M = 3.79). Meanwhile, the construct "Channel Switching Convenience" achieved the lowest mean score of all (M = 3.54), which means that the customers have not yet been able to switch effortlessly from one distribution channel to another.

Table 3: Descriptive Statistics of Key Constructs

Construct	N	Min	Max	Mean	SD	Skew	Kurtosis
OIP	340	1.60	5.00	3.79	0.731	-0.34	-0.21
OCE	340	1.40	5.00	3.63	0.762	-0.27	-0.18
OFCE	340	1.80	5.00	3.87	0.709	-0.41	0.14
CSC	340	1.25	5.00	3.54	0.804	-0.19	-0.31
TPS	340	1.60	5.00	3.92	0.694	-0.38	0.09
CPS	340	1.33	5.00	3.71	0.748	-0.29	-0.14

Note: OIP = Omnichannel Integration Perception; OCE = Online Channel Experience; OFCE = Offline Channel Experience; CSC = Channel Switching Convenience; TPS = Trust and Perceived Safety; CPS = Customer Purchase Satisfaction. All constructs measured on a 5-point Likert scale.

5.4 Pearson Correlation Analysis

The bivariate Pearson correlation matrix is shown in Table 4. It was found that all independent variables were positively correlated to Customer Purchase Satisfaction at the $p < .01$ level of significance. Among independent variables, Trust & Perceived Safety ($r = .638$) and Omnichannel Integration Perception ($r = .673$) had the strongest positive relationship with CPS, followed by Offline Channel Experience ($r = .548$) and Channel Switching Convenience ($r = .524$). The highest correlation between two independent variables occurred between OIP and TPS ($r = .614$), but it did not cross the multicollinearity threshold (0.70).

Table 4: Pearson Correlation Matrix

Variable	OIP	OCE	OFCE	CSC	TPS	CPS	
OIP	1.000						
OCE	0.572**	1.000					
OFCE	0.489**	0.413**	1.000				
CSC	0.531**	0.497**	0.378**	1.000			
TPS	0.614**	0.438**	0.512**	0.461**	1.000		
CPS	0.673**	0.591**	0.548**	0.524**	0.638**	1.000	

*Note: ** Correlation significant at 0.01 level (2-tailed). OIP = Omnichannel Integration Perception; OCE = Online Channel Experience; OFCE = Offline Channel Experience; CSC = Channel Switching Convenience; TPS = Trust and Perceived Safety; CPS = Customer Purchase Satisfaction.*

5.5 Multiple Regression Analysis (H1–H5)

The findings of the multiple regression analysis, where Customer Purchase Satisfaction serves as the dependent variable, are displayed in Table 5. As the table shows, the whole model proved statistically significant [$F(5, 334) = 129.67$, $p < .001$] and accounted for 66.0% of the variability in CPS ($R^2 = 0.660$, Adjusted $R^2 = 0.654$). Each of the five independent variables was found to have a significant effect on the model in its own right. Values of Variance Inflation Factors (VIFs) were from 1.591 to 1.729 and therefore indicated no serious multicollinearity issues [28].

Among all the variables, Omnichannel Integration Perception had the highest impact on consumer behavior ($\beta = 0.321$, $t = 6.979$, $p < .001$). This was followed by Trust and Perceived Safety ($\beta = 0.264$, $t = 5.796$, $p < .001$), Online Channel Experience ($\beta = 0.252$, $t = 4.843$, $p < .001$), Channel Switching Convenience ($\beta = 0.211$, $t = 3.379$, $p = .001$), and Offline Channel Experience ($\beta = 0.208$,$t = 4.056$, $p < .001$).

Table 5: Multiple Regression Analysis - Predictors of Customer Purchase Satisfaction

Predictor	B	SE B	β	t	p	VIF	Decision
(Constant)	0.741	0.174	—	4.259	.000	—	—
Omnichannel Integration Perception (OIP)	0.328	0.047	0.321	6.979	.000	1.712	H1 Accepted
Online Channel Experience (OCE)	0.247	0.051	0.252	4.843	.000	1.648	H2 Accepted
Offline Channel Experience (OFCE)	0.219	0.054	0.208	4.056	.000	1.591	H3 Accepted
Channel Switching Convenience (CSC)	0.196	0.058	0.211	3.379	.001	1.673	H4 Accepted
Trust and Perceived Safety (TPS)	0.284	0.049	0.264	5.796	.000	1.729	H5 Accepted
$R = 0.812$, $R^2 = 0.660$, Adj. $R^2 = 0.654$, $F(5, 334) = 129.67$, $p < .001$							

Note: Dependent variable: Customer Purchase Satisfaction (CPS). B = Unstandardised coefficient; SE B = Standard error; β = Standardised beta; VIF = Variance Inflation Factor. All VIF values < 2.0 indicate no multicollinearity concern.

5.6 One-Way ANOVA — Channel Group Comparison (H6)

Hypothesis H6 was tested using a one-way analysis of variance (ANOVA) to assess mean differences in customer purchase satisfaction among users of offline channels only (n = 89), online channels only (n = 63), and both offline and online channels (n = 188). As shown in Table 6, the ANOVA produced an extremely statistically significant finding [$F(2, 337) = 47.82$, $p < .001$]. The results of Tukey's Honestly Significant Difference (HSD) post hoc analysis indicated that all three group combinations were statistically different ($p < .01$), with omnichannel shoppers expressing the greatest satisfaction ($M = 4.02$, $SD = 0.639$), followed by online-only ($M = 3.48$, $SD = 0.741$) and offline-only ($M = 3.31$, $SD = 0.782$) consumers.

Table 6: One-Way ANOVA — Customer Purchase Satisfaction by Channel Group

Channel Group	N	Mean CPS	SD	F	p	Post-hoc (Tukey)
Only Offline	89	3.31	0.782			
Only Online	63	3.48	0.741	47.82	.000	Omni > Online > Offline
Omnichannel (Both)	188	4.02	0.639			(All pairs p < .01)

Note: Dependent variable: Customer Purchase Satisfaction (CPS). Post-hoc comparisons conducted using Tukey's HSD procedure.

5.7 Chi-Square Test — Channel Preference × Trust Level (H7)

Table 7 shows the cross-tabulation and chi-square test for the relationship between pharmaceutical channel preference (Offline Only, Online Only, and Omnichannel) and the level of trust (three categories of levels: Low, Moderate, and High). The Pearson chi-square test was statistically significant [$\chi^2(4) = 61.47$, $p < .001$], and Cramer's V was found to be 0.301, showing a moderate strength of the association. The cross-tabulation results show that the proportion of high-trust consumers was mostly present in the omnichannel category (75.0%), whereas the low-trust consumers were mainly from the Offline Only category (57.7%). Hypothesis H7 is supported.

Table 7: Chi-Square Test - Pharmaceutical Channel Preference vs. Trust Level

Trust Level	Offline Only	Online Only	Omnichannel	Row Total
Low Trust (1–2)	41	12	18	71
Moderate Trust (3)	35	28	62	125
High Trust (4–5)	13	23	108	144
Column Total	89	63	188	340
$\chi^2 = 61.47$, df = 4, $p < .001$ (Cramer's V = 0.301)				

Note: χ^2 = Pearson Chi-Square statistic; df = degrees of freedom; Cramer's V is a measure of effect size (0.3 = moderate association).

5.8 Summary of Hypothesis Testing

All seven hypotheses of this research study were accepted, as shown in Table 8 below. Table 8 offers a comprehensive summary of the findings of all seven hypotheses tested in this study.

Table 8: Summary of Hypothesis Testing Results

H#	Hypothesis	Outcome	Statistical Evidence
H1	Omnichannel integration perception significantly and positively influences customer purchase satisfaction in pharma retailing.	Accepted	$\beta = 0.321$, $t = 6.979$, $p < .001$
H2	Online channel experience positively influences customer purchase satisfaction in pharma omnichannel retailing.	Accepted	$\beta = 0.252$, $t = 4.843$, $p < .001$
H3	Offline channel experience positively influences customer purchase satisfaction in pharma omnichannel retailing.	Accepted	$\beta = 0.208$, $t = 4.056$, $p < .001$
H4	Channel switching convenience positively influences customer purchase satisfaction in pharma omnichannel retailing.	Accepted	$\beta = 0.211$, $t = 3.379$, $p = .001$
H5	Trust and perceived safety significantly influence customer purchase	Accepted	$\beta = 0.264$, $t = 5.796$, $p < .001$

	satisfaction with pharma products across channels.		
H6	Omnichannel pharma consumers report significantly higher purchase satisfaction compared to single-channel consumers.	Accepted	F(2,337)=47.82, p<.001; Omni Mean=4.02
H7	There is a significant association between channel preference and trust level in online pharma purchasing.	Accepted	$\chi^2(4)=61.47$, p<.001, Cramer's V=0.301

6. Discussion

The results of the research presented here make a meaningful contribution to the emerging field of studies on omnichannel retailing in the pharmaceutical industry. Given the strong explanatory power of the regression equation (Adjusted $R^2 = 0.654$), it is confirmed that the proposed model of five constructs based on SERVQUAL and UTAUT2 theory is adequate.

That the highest level of importance for Omnichannel Integration Perception ($\beta = 0.321$) makes it the leading predictor of the model further emphasizes the underlying proposition by Verhoef et al. [9] that "integration—not channel availability—will make or break the omnichannel approach". In the context of consumers buying drugs, the integration of these channels is realized through the synchronization of the prescription history across both online and offline channels, as well as drug histories being available on both online and in-store pharmacy channels, as well as price and availability information.

Trust and Perceived Safety ($\beta = 0.264$) is the second highest predictor, reinforcing the specific risk situation related to the purchase of medicines that is mentioned in literature [6, 23, 24]. As opposed to regular consumer goods, medications pose serious health risks in case of low quality. Hence, the requirements for institutional trust are higher in this case. Consumers' tendency to choose an omnichannel approach for purchasing in cases where they have high trust (Table 7, Cramer's V = 0.301) indicates a feedback loop whereby consumers get to be exposed to a well-coordinated online and offline pharmacy experience that creates their institutional trust, allowing for continued omnichannel shopping.

Given the statistically significant difference in satisfaction between omnichannel shoppers (M = 4.02) and those using either the online-only channel (M = 3.48) or offline-only channel (M = 3.31), this provides strong evidence for the value of the omnichannel approach in the pharma context. These results align well with findings by Herhausen et al. [12] and Beck and Rygl [10], which were found in general retailing situations. The lesser degree of customer satisfaction among offline-only shoppers might be explained by rising expectations for digital services (online delivery, medication reminder, pricing comparisons) unfulfilled by traditional physical pharmacies.

With a β coefficient value of 0.211, the channel switching convenience construct had the lowest mean score amongst all the constructs analyzed (M = 3.54). This can be attributed to various reasons such as the limitations set by the existing regulation regime, which lacks an integrated digital prescription facility in the nation. Another reason is that of technological difference between major aggregators such as Tata 1mg and PharmEasy, and the independent retailers. The latter often does not have the capability to integrate with technology.

Taking into consideration the pharmaceutical industry of Gujarat, which is unique and well-known worldwide [7], it can be seen that the issue that remains in the focus of attention of such an innovative state is the integration of its numerous retail pharmacy facilities (which are said to exceed the number of 25,000), with the electronic distribution network system. As can be seen from the results obtained by means of ANOVA (Table 6), 55.3% of the analyzed sample belongs to omnichannel shoppers.

7. Conclusion and Implications

In this paper, an omnichannel customer satisfaction model that has been empirically tested and validated for its application to the Indian pharmaceutical retail sector is presented for the first time. The results

indicate that perceptions of omnichannel integration, online/offline channel experiences, channel switching ease, and trust/safety are highly influential in determining pharmaceutical customers' purchase satisfaction, with 66% of variance explained by the model as a whole. Omnichannel shoppers consistently score better than single-channel shoppers on purchase satisfaction scales, and trust is strongly correlated with channel preferences.

7.1 Managerial Implications

To the pharmacy retailers and the e-pharmacy portals, the following suggestions emerge from the research: (i) creation of an investment strategy for integrating API-enabled pharmacy management software with digital portals to facilitate prescription management in real time; (ii) implementation of a common system of customer identity management that enables consumers to move seamlessly from online shopping to offline collection of orders without duplication of data; (iii) clear dissemination of regulatory compliance credentials (CDSCO registration, quality certificates), which would serve as a basis for trust; and (iv) provision of digital counselling capabilities for pharmacists.

For policy makers, the paper recommends: (i) speedier implementation of the NDHM's Health ID and Unified Health Interface (UHI) systems to enable seamless prescriptions across platforms; and (ii) simplified rules for omnichannel pharmacy retail to lower the compliance burden for small to medium sized independent pharmacies wishing to go digital.

7.2 Limitations and Future Research

However, this study suffers from various limitations. First, the cross-sectional nature of the research does not allow studying the changes in omnichannel satisfaction due to repeated channel engagement. Second, the sample selected for analysis may be unrepresentative of rural consumers in pharmaceuticals as they encounter their own set of problems in terms of accessibility. Third, the use of self-reported data on channel satisfaction may have introduced bias in recall and social desirability factors. Future studies should focus on (i) the mediating effect of the product type (over-the-counter versus prescription, chronic versus acute medicines), (ii) longitudinal panel-based approaches analyzing consumer behavior in relation to the omnichannel experience, (iii) qualitative exploration of the pharmacist's role in connecting the online and offline channels, and (iv) application of the model to other states in India and beyond.

References

[1] Accenture. (2021). Digital health technology vision 2021: *Pharma's digital Rx. Accenture Health*. https://www.accenture.com/us-en/insights/health/digital-health-technology-vision-2021

[2] IBEF. (2023). Indian pharmaceutical industry analysis. *India Brand Equity Foundation*. https://www.ibef.org/industry/pharmaceutical-india

[3] Brynjolfsson, E., Hu, Y. J., & Rahman, M. S. (2013). Competing in the age of omnichannel retailing. *MIT Sloan Management Review, 54*(4), 23–29.

[4] Piotrowicz, W., & Cuthbertson, R. (2014). Introduction to the special issue: Information technology in retail — toward omnichannel retailing. *International Journal of Electronic Commerce, 18*(4), 5–16. https://doi.org/10.2753/JEC1086-4415180400

[5] Lazaris, C., & Vrechopoulos, A. (2014). From multichannel to omnichannel retailing: Review of the literature and calls for research. Paper presented at the 2nd International Conference on Contemporary Marketing Issues (ICCMI).

[6] Kumar, V., & Reinartz, W. (2016). Creating enduring customer value. *Journal of Marketing, 80*(6), 36–68. https://doi.org/10.1509/jm.15.0414

[7] Pharmacyclics. (2022). Gujarat pharmaceutical industry report: Manufacturing hub of India. Gujarat State Biotechnology Mission (GSBTM).

[8] Rigby, D. (2011). The future of shopping. *Harvard Business Review, 89*(12), 65–76.

[9] Verhoef, P. C., Kannan, P. K., & Inman, J. J. (2015). From multi-channel retailing to omni-channel retailing: Introduction to the special issue on multi-channel retailing. *Journal of Retailing, 91*(2), 174–181. https://doi.org/10.1016/j.jretai.2015.02.005

[10] Beck, N., & Rygl, D. (2015). Categorization of multiple channel retailing in multi-, cross-, and omni-channel retailing for retailers and retailing. *Journal of Retailing and Consumer Services, 27*, 170–178. https://doi.org/10.1016/j.jretconser.2015.08.001

[11] Cao, L., & Li, L. (2015). The impact of cross-channel integration on retailers' sales growth. *Journal of Retailing, 91*(2), 198–216. https://doi.org/10.1016/j.jretai.2014.12.005

[12] Herhausen, D., Binder, J., Schoegel, M., & Herrmann, A. (2015). Integrating bricks with clicks: Retailer-level and channel-level outcomes of online–offline channel integration. *Journal of Retailing, 91*(2), 309–325. https://doi.org/10.1016/j.jretai.2014.12.009

[13] Ministry of Health and Family Welfare, Government of India. (2018). Draft rules for regulation of e-pharmacy. Gazette of India.

[14] Chawla, D., & Joshi, H. (2020). The moderating role of demographic variables on mobile banking adoption: An empirical investigation. *International Journal of Bank Marketing, 38*(1), 1–28. https://doi.org/10.1108/IJBM-01-2019-0004

[15] Chahal, H., Wirtz, J., & Verma, A. (2020). Social media brand engagement: Dimensions, drivers and consequences. *Journal of Consumer Marketing, 37*(2), 191–204. https://doi.org/10.1108/JCM-11-2018-2937

[16] Orizio, G., & Gelatti, U. (2010). Public health rationale for a specific focus on cyberpharmacies. *Trends in Pharmacological Sciences, 31*(12), 542–546. https://doi.org/10.1016/j.tips.2010.09.007

[17] Goyal, V., & Bhatt, K. (2021). E-pharmacy adoption in India: The role of institutional trust and regulatory compliance. *Journal of Health Management, 23*(4), 572–588. https://doi.org/10.1177/09720634211049682

[18] Lemon, K. N., & Verhoef, P. C. (2016). Understanding customer experience throughout the customer journey. *Journal of Marketing, 80*(6), 69–96. https://doi.org/10.1509/jm.15.0420

[19] Berry, L. L., Danaher, T. S., Beckham, D., Awdish, R. L. A., & Mate, K. S. (2017). When patients and their families feel like hostages to health care. *Mayo Clinic Proceedings, 92*(9), 1373–1381. https://doi.org/10.1016/j.mayocp.2017.05.015

[20] Akter, S., & Wamba, S. F. (2016). Big data analytics in e-commerce: A systematic review and agenda for future research. *Electronic Markets, 26*(2), 173–194. https://doi.org/10.1007/s12525-016-0219-0

[21] Shi, S., Wang, Y., Chen, X., & Zhang, Q. (2020). Conceptualization of omnichannel customer experience and its impact on shopping intention: A mixed-method approach. *International Journal of Information Management, 50*, 325–336. https://doi.org/10.1016/j.ijinfomgt.2019.09.001

[22] Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the Unified Theory of Acceptance and Use of Technology. *MIS Quarterly, 36*(1), 157–178. https://doi.org/10.2307/41410412

[23] Qureshi, I., Fang, Y., Ramsey, E., McCole, P., Ibbotson, P., & Compeau, D. (2009). Understanding online customer repurchasing intention and the mediating role of trust — an empirical investigation in two developed countries. *European Journal of Information Systems, 18*(3), 205–222. https://doi.org/10.1057/ejis.2009.15

[24] Huang, Z., & Benyoucef, M. (2013). From e-commerce to social commerce: A close look at design features. *Electronic Commerce Research and Applications, 12*(4), 246–259. https://doi.org/10.1016/j.elerap.2012.12.003

[25] Pavlou, P. A., & Fygenson, M. (2006). Understanding and predicting electronic commerce adoption: An extension of the theory of planned behaviour. *MIS Quarterly, 30*(1), 115–143. https://doi.org/10.2307/25148720

[26] Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing, 64*(1), 12–40.

[27] Saunders, M., Lewis, P., & Thornhill, A. (2019). Research methods for business students (8th ed.). Pearson Education.

[28] Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). Multivariate data analysis (8th ed.). Cengage Learning.

[29] Nunnally, J. C., & Bernstein, I. H. (1994). Psychometric theory (3rd ed.). McGraw-Hill.