

Topic: Enhancing Customer Loyalty through Personalized Experiences in E-Commerce

Neetu¹ and Dr Anupama Pandey²

¹Research Scholar, Department of Management and Commerce, Nims School of Business, Jaipur, Rajasthan

Email: welcme.neetu93@gmail.com

²Professor, Department of Management and Commerce, Nims School of Business, Jaipur, Rajasthan

Email ID: - anupama.pandey@nimsuniversity.org

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ABSTRACT

Personalization in e-commerce has emerged as a key strategy for fostering long-term customer relationships, especially as the market offers a growing variety of products and digital deals. Several studies have revealed that customizing content, offers, and the experience leads to more satisfaction and therefore loyalty but the empirical evidence concerning the emerging markets and tier-II cities in India has been scarce. The very purpose of this study is to investigate the connection between personalization and demographic factors such as age, income, and education on the customer loyalty of e-commerce firms in the Jaipur District. 150 customers were given a structured questionnaire, and 101 of these gave valid responses. Description statistics, correlation analysis, chi-square, and multiple regression tests were run to show how personalization, demographics, and loyalty are related. The authors found that the utilization of personalization for the customer's loyalty was positively affected, and the demographic factors had a mixed result with a relatively weaker effect. These discoveries indicate that if a company takes into account customer trust and privacy issues, correct personalization may receive and bolster loyalty even in a very tough digital marketplace. The study is a part of a new trend in the literature on marketing and loyalty regarding the personalized customer treatment in the developing country market that is India and it is an encouragement to the Digital marketing part of it as well.

Keywords: Personalization, Customer loyalty, Demographic factors.

INTRODUCTION:

Research background

The rapid expansion of the internet, smartphones, and digital payment methods has completely transformed how consumers seek information, evaluate options, and make purchases. In India, the change has been very noticeable in the huge increase of e-commerce platforms that now are not only in the metro cities but also in places like Jaipur, which are tier-II and tier-III. So, businesses that want to succeed in this type of market must eliminate price as the only factor as they are now the ones who depend most on, not price alone but on differentiating customer experiences, relationship quality, and technological capabilities to retain customers in the long run.

One of the most effective means in the present-day business scenery is personalization which is manifested through creating individual-based promotion schemes, content, and interpersonal communication. Additionally, it is stated that the very possibility of being excluded from the choice process is far greater on the basis of non-personalized recommendations even though the subjective importance to the customer is high".

Simultaneously, personalization is tightly interconnected with the already established marketing constructs of relationship quality, satisfaction and trust.

The perception of service quality can be intensified through the individualization of the service which will consequently improve customer loyalty in all environments especially online [1; 2).

Using digital channels, the availability of internet and technologies in general facilitated the speed of doing business in more than just one aspect. In this regard, e-CRM systems serve companies by not only gathering direct consumer input but also by monitoring and analysing customer data in real-time, allowing for the immediate processing of structured and unstructured inputs. In addition to that, new insights in digital customer interaction reveal that even though personalization can be a company's strong point, customers might worry about other characteristics like privacy.

In addition to this, personalization is also a topic that presents challenges that are equally important regarding the privacy issue, data security, and fairness of the algorithm. Customers wish for individualized experiences but they also, at the same time, are concerned that their data are being gathered and used differently [3; 4].

These concerns are highly significant in emerging markets and are even more so when the regulatory

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frameworks are in process of evolution and data rights are not yet well known to the customers [5].

In the Indian e-commerce scenario, the dominant sites make use of cutting-edge AI-powered personalization to get the best out of customer interactions. This includes applying real-time recommendations, making customized landing pages, and sending out push notifications to the desired targets. Global studies disclosed that AI-powered personalization can be a highly effective mean to strengthen brand loyalty and this is mainly through retention and the customers' excitement about the online brand [6; 7].

However, the data from the majority of empirical studies still come from mature and large markets of Western or East Asia, with only a few works paying attention to how personalization affects customer loyalty in certain geographical regions in the Indian market.

Problem Statement

Despite the fact that personalization is frequently used in Indian online trade, the real effect on loyalty in semi-urban and urban areas such as Jaipur is not thoroughly studied. A number of customers in those areas are people who pay great attention to the cost, play games on more than one platform, and care a lot for the value that they perceive and trust. Foreign investigations show that personalization is a tool to increase customer satisfaction and loyalty; however, they also talk about the role of culture, risk perception, and demographics among those in and around the market who are affected by the changes [1; 8; 9].

The current study will look at the matter in a new way by investigating through empirical analysis the influence of personalization and some of the demographic factors such as age, income and education on customer loyalty toward e-commerce companies in Jaipur District. The study, through primary survey data and inferential statistics, tries to give a well-grounded indication peculiar to this setting, hence, aiming to provide inputs for the future researches and practices of local digital marketing strategies that have a similar context.

Aims and objectives

Aims

The primary aim of this research is to analyse the impact of Personalization on Customer Loyalty in E-commerce company in Jaipur District.

Objectives

The objective of this research is:

- To determine the impact of Age on customer loyalty.
- To analyse whether there is any influence of income level on customer loyalty.
- To determine if education level affects the customer loyalty or not.
- To evaluate the impact of personalization on customer loyalty.

Hypothesis

H1: There is significant impact of age on customer loyalty.

H2: Income level of the customers has significant influence on customer loyalty.

H3: Education level has significant effect on customer loyalty.

H4: There is significant impact of personalization on customer loyalty.

LITERATURE REVIEW

1. Personalization, customer experience, and satisfaction in e-commerce

Personalization within e-commerce is often executed with the help of recommendation engines, products specific to a customer's taste, customized discounts, and even interface adoptions. From a number of studies, it is noticeable, that they can be a source of confidence in the product, boost the joy of shopping, and bring convenience to the experience of the retailer [2; 4].

Tyrväinen et al. (2020) explain that hedonic motivation and personalization have a combined effect of bringing in customer experiences in omnichannel sourcing which summarily create loyalty. Besides, Hallikainen et al. (2022) present a product recommender and price cut-off through the grocery store, and they successfully conclude that, in the case of personalization meeting consumer's expectations, the frequency of purchase and loyalty KPIs will remarkably increase.

Recent research shows that AI-based customization in public space is key to customer's loyalty by learning automatically from interactions with customers and giving them more and more pertinent incentives [6; 7]. Therefore, the potential benefit of such mechanisms may be even greater for loyalty in such cases.

2. Trust, privacy, and the personalization–loyalty link

Personalization may bring numerous advantages, but it also poses considerable risks to privacy and trust security. Pappas (2018) mentions the “the personalization–privacy paradox” and argues that the preference for personalized online shopping is sided with concerns about the surreptitious use of data and unwanted targeting, which in turn drives a fall in purchase intentions. To build on this, Riaz (2024) suggests that the openness about data practices and the involving of the customer in the process of control are the main characteristics of being trustful in personalization.

Cheruku (2025) contends that with e-commerce, the success of data privatization management and transparency in the use of data can relieve privacy worries and uphold trust, consequently bolstering the favourable impact of personalization on loyalty. This is supported by studies on AI-assisted personalization in e-commerce that the user earns personalization, privacy and benefits, and it will lead to good and strong loyalty; at the same time, where the algorithm is hidden, or

invasive, the reactance will be aroused leading to loyalty erosion [10; 11].

3. Demographic factors and personalization outcomes

Demographic factors like age, income, and education play a significant role in customers' personalization perceptions as well as their reactions. Sarwar and Amin (2019) revealed in some research that younger audience is generally inclined toward personalization that is AI-

generated and that they are even very straightforward about the extent to which they would allow data collection by these technologies for convenience and real-time offers, although older consumers might have larger fears and privacy concerns [4; 10]. Similarly, measuring income and the level of achieved education can be crucial in determining the effectiveness of the personalization-loyalty connection by influencing the level of digital literacy, perceived value, and trust in online channels [12].

METHODOLOGY

Sample size

In this research, around 150 persons, who are living in the Jaipur district of Rajasthan were contacted and asked to complete the survey conducted on google form. The link of google form were shared with these persons via email, WhatsApp and Facebook. Out of these 150 persons, only 101 responded. Hence, the size of the sample is 101.

Data collection technique

The data has been collected from primary source. Survey method has been employed to collect the data through online platform. The nature of collected data is quantitative, as the data can be transformed into numerical form and can be analysed scientifically. The data has been collected for demographic, personalization and customer loyalty. Demographic variables include age, annual income and education level. On the other hand, personalization variable has seven different factors, description of which has been attached in the appendix. Both personalization and loyalty have been measured at 10 level Likert scale. In case of personalization, 0 indicates not agreed, while 10 indicates highly agreed. On the other hand, 0 indicates no customer loyalty while 10 indicates highly loyal towards company.

Data analysis technique

The descriptive technique has been employed to get the summary of collected data. On the other hand, different analytical tools such as correlation, regression and Chi-square test have been utilized. The significance of application of correlation test is that it shows the strength of relationship between two variables along with direction of relationship. Correlation test has also supported in determining whether there is any issue of multi-collinearity between independent variables. Regression test has been employed to establish the predictive model for estimating the loyalty of e-commerce firm. Apart from this, Chi-square test has only been applied to find the impact of education level on customer loyalty. Since data of education level is non-numeric and carries equal value, chi-square test has been employed to determine their impact on customer loyalty.

RESULT AND DISCUSSION

The main goal of the research was to investigate the influence of demographic factors and personalization on customer loyalty of e-commerce users in Jaipur. A wide range of statistical tools, that is; descriptive analysis, correlation, VIF, regression and chi-square test, were used for meaningful conclusions. The part that follows offers an insightful explanation of the outcomes that links back to the literature and also touches upon the practicality of the findings.

Descriptive Analysis

Descriptive Statistics					
	Minimum	Maximum	Mean	Std. Deviation	Skewness
Age	17.0	57.0	34.040	10.8083	.445
Income	.0	570.0	333.267	123.4270	-.290
P1	2.0	10.0	6.089	1.6976	.208
P2	1.0	9.0	5.089	1.6976	.208
P3	3.0	10.0	7.050	1.6148	-.024
P4	.0	8.0	4.089	1.6976	.208
P5	2.0	9.0	6.050	1.6148	-.024
P6	.0	7.0	4.050	1.6148	-.024
P7	1.0	10.0	5.307	1.9170	.307
Loyalty	2.0	8.0	5.356	1.4600	.064
Valid N (listwise)					

The descriptive statistics represents an essential part of the participants' characteristics and their views on personalization and loyalty. The age limit goes from 17 to 57 years and the average age is 34.04 years. It leads to the conclusion that the respondents are mostly young and middle-aged people— these are a vital market for e-commerce, as this group is generally more tech-savvy and online-shopper-oriented.

The rather small standard deviation (10.8) in the age group indicates a moderate degree of variability, which in turn implies that the ages of the respondents are not too far from each other. The skewness value (0.445) is still inside the range of normality, which shows that the distribution of ages does not tremendously affect the data.

The income figures, when considered as a thousandth part of their real value, points to a central tendency of ₹333.27 with a dispersion of 123.42, evidence of substantial spread of the data. It is very likely that electronic trading users in Jaipur are represented by a very wide range of incomes making it highly significant for a company to offer multiple affordability levels.

Loyalty presents with a mean value of 5.356, meaning that it is mostly the case that the customers have a medium level of loyalty and that the customer can still be easily swayed from one platform to the other, a behaviour very common in the highly competitive digital markets where decision-making is greatly influenced by price, convenience, and experience factors.

Education level					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		1	1.0	1.0	1.0
	12th	15	14.7	14.7	15.7
	Graduate	74	72.5	72.5	88.2
	Post-graduate	12	11.8	11.8	100.0
	Total	102	100.0	100.0	

Based on the education status line-up, it turns out that as many as 72.5 percent of the respondents are university graduates, hence making the research results stand out among the digitally literate educated populace. There is a minimal number of postgrads at 11.8% and not-graduated from a college level which stands at 14.7%, the fact which shows that the sample group is skewed towards people with academic backgrounds, this might impact their perception of the services provided, levels of privacy expectations and customer care from the online shop.

Correlation Analysis

Correlations										
	Age	Income	P1	P2	P3	P4	P5	P6	P7	Loyalty
Age	1	.962	-.112	-.112	-.103	-.112	-.103	-.103	.017	-.103
Income	.962	1	-.179	-.179	-.159	-.179	-.159	-.159	.009	-.155
P1	-.112	-.179	1	1.000	.994	1.000	.994	.994	-.116	.955
P2	-.112	-.179	1.000	1	.994	1.000	.994	.994	-.116	.955
P3	-.103	-.159	.994	.994	1	.994	1.000	1.000	-.124	.960
P4	-.112	-.179	1.000	1.000	.994	1	.994	.994	-.116	.955
P5	-.103	-.159	.994	.994	1.000	.994	1	1.000	-.124	.960
P6	-.103	-.159	.994	.994	1.000	.994	1.000	1	-.124	.960
P7	.017	.009	-.116	-.116	-.124	-.116	-.124	-.124	1	.089
Loyalty	-.103	-.155	.955	.955	.960	.955	.960	.960	.089	1

Correlation analysis is the process of analyzing the strength and the direction of the relationship between the variables. A major finding is the very high correlation between age and income (0.962), which was anticipated since income typically increases with age due to more work experience. However, besides being a great thing to have, also this high correlation brings with it a risk, as it is one of the causes of multicollinearity when both variables are included in regression models. Inter-item correlations among personalization components (P1–P7) are indeed very high, which means that one of the main reasons behind such high intercorrelations is that customers see personalization on a larger scale, as they perceive a platform to be good in personalized messages at the same time they also believe, and it is actually so, that P7 is the only personalization variable, out of all of them, that does not display a significantly high (~0.95) positive correlation with loyalty. It is as a consequence that customers will not be very responsive, or even the new customer from the non-strategic segment, if not treated based on their preferences in the most personalized or unique way, or even worse, if not put in a segmented group with the potential for priority custom-made offers P7, which stands for notifications about new products and discount offers, has a weak positive correlation (.089) with loyalty. Such a departure is intriguing and may be associated with the “notification fatigue” phenomenon. A lot of clients consider the alerts to be annoying rather than beneficial, thereby diminishing their loyalty.

VIF Test

Coefficients ^a		
Model	Collinearity Statistics	
	Tolerance	VIF

1	Age	.062	16.218
	Income	.059	16.991
	P4	.009	105.747
	P6	.010	103.462
	P7	.978	1.022
a. Dependent Variable: Loyalty			

The VIF test is a statistical technique that is used to give a clear picture of problems caused by multicollinearity. If the VIF is more than 10, this is considered and can be seen as an indication for redundant predictor variables. Here in this case on Age and Income the VIF values are not only higher than 10, but they both are higher than 16, which confirms the multicollinearity. What is more is that the VIF values of P4 and P6 are very high above 100, the implications being that there is the highest overlap between these personalization variables of all others.

With such high VIF values, it is not statistically proper to keep all these variables in the model because they inflate standard errors and compromise the accuracy of coefficient estimates. Consequently, SPSS has deleted a number of the independent variables automatically during the modeling process. Initially, only the variables age, P6, and P7 were kept that had unique explanatory. Finally, only P6 and P7 were let in the last regression model that is a good predictor.

Regression test

Regression analysis is at the heart of the study's inferential results and gives critical information about the factors that cause customer loyalty. After applying different predictive models, only P6 and P7 have been selected as coefficient. Other variables have shown no relationship or impact on loyalty.

Model	R	R Square
1	.982a	.965

ANOVAa						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	205.678	2	102.839	1345.491	.000b
	Residual	7.490	98	.076		
	Total	213.168	100			

Coefficientsa					
Model		Unstandardized Coefficients		Standardized Coefficients	Sig.
		B	Std. Error	Beta	
1	(Constant)	.890	.114		.000
	P6	.891	.017	.986	.000
	P7	.161	.015	.212	.000

The model demonstrates an absurdly high R value of 0.982, which declares the selected predictors and the dependent variable to have an almost flawless linear relationship. The R-square value of 0.965 is another nail in the coffin, as it virtually reveals that 96.5 percent of the entire variation in consumer loyalty is due to the two under analysis, P6 and P7, a personalization variable.

The fact that R-square is so high opens up many opportunities for future studies and at the same time it supports the idea of having very loyal customers, but whose similarity can be explained mostly by the shared use of the technology at the root of their experience.

The statistics of the ANOVA test and the associated p-value of 0.000 indicate that the regression model is statistically significant and, moreover, the personalization variables have influence on customer loyalty collectively. Details from the coefficients table unveil an interesting thing. P6, which stands for customers' ability to find exactly what they are looking for on the website, becomes the most significant predictor. Its unstandardized coefficient and standardized coefficient of 0.891 and 0.986, respectively, place it in the leading position. This is the result that would be expected—customers are going to revisit the platform where they consistently find things that are exactly or very close to what they want. Therefore, search precision and product relevance play a significant role in the process of repeat purchase generation and loyalty overall.

The P7 variable is the second one which is more about someone being notified on new product releases and special discount offers. Even though it is significant with a p-value, well below 5%, this P07 significantly differs in a very less degree from the behavior related to P06. The results show that at the meantime conditions for strong relationships existing between promotional notifications and customer's loyalty are not yet completely satisfied. It is observed that many existing online platforms may be sending the same message to their customers and, therefore, the impact of such messages on loyalty is very weak through all the flexibilities that exist in the retail business practices.

Hence, null hypothesis will be rejected and it can be commented that there is significant impact of personalization on customer loyalty. Based on above table, following prediction equation can be formed:

Customer Loyalty = 0.890 + 0.891 (P6) + 0.161 (P7).

The output of the regression model suggests that a significant improvement in search relevance (P6) made a huge impact and that increasing notifications (P7) resulted in only a small increase in customer loyalty. This information is highly beneficial for e-commerce managers because with customers shopping through all available channels and bothered by promotional messages at the same time, the main companies will benefit from a different approach, i.e. focusing on the improvement of algorithms and search engines and providing AI-based recommendations most.

Chi-square test

A chi-square test has been used in order to check if the loyalty of the customer is impacted by the education level. A Pearson chi-square value of 102.132 and a p-value of 0.000 show a strong connection between the two variables. As a result, it can be said that the loyalty patterns of the different education groups are not the same.

Education level * Loyalty1 Crosstabulation				
Count				
		Loyalty1		Total
		No	Yes	
Education level				
	12th	9	6	15
	Graduate	47	27	74
	Post-graduate	8	4	12
Total		64	37	101

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	102.132a	6	.000
Likelihood Ratio	11.370	6	.078
N of Valid Cases	102		

The spread of graduated and 12th-grade students between the loyal and unloyal customers points to another direction of thought. At first, the graduated people appear to be the most active and loyal among all of them, and there may be different reasons for it, for example, they may be the most up-to-date and accustomed to electronic activities, the most critical with online personalization features, or the most comfortable with shopping in the e-commerce environment. On the other hand, the people with only a 12th-grade education show lower loyalty to the company, and this can mainly be a result of one of these two factors or because of both being possessed by them: not being much exposed to the digital world or being very money-conscious, thus ready to change the brand as soon as better prices come up.

This result is important because it is an argument in favor that personalization is a significant factor which can be used to predict loyalty but an individual's educational background is silent but powerful persuader in the decision of how the personalization is taken and judged.

DISCUSSION

The synthesis of all the statistical analyses undoubtedly suggests that the Jaipur e-commerce customer loyalty model depends heavily on personalization. Personalization is the most dominant factor and it makes demographic variables like age and income insignificant when personalization includes them. Customers, definitely, are looking for online shopping that is made for them, quick, and is also one with their tastes.

The significance of P6, search relevance being the most powerful predictor underscores the importance of convenience and accuracy in online retail settings. Today, customers expect that e-commerce systems have already known exactly what they want, even before they mention or search for it. The satisfaction and the positive rating of the customer with respect to the platform will be directly associated with the customer's ease of browsing and finding.

Nevertheless, the moderate influence of P7 can still be seen in the customers' perceptions of real and communicative personalized offers. When not handled in the right way, the push notifications can easily be misjudged as spam or irksome interruptions. This is in accord with the worldwide survey where it was found that the customers' "sinusoidal wave" in the end for the personalization – they get a feeling from being relaxed to being bombed when it becomes too much.

The demographic differences found in the study helped to uncover the complex nature of the issue. People's age and income do not play a significant role in customer loyalty but this is not the case with the level of education. The latter is probably due to differences in online activities, the level of confidence, and the place where customers want to see privacy level (and hence advertising), between the subgroups of the level of education. In other words, the users with a level of higher education are more likely to make use of and find value in more subtle personalization features than those who are less educated and focus more on price, convenience, or other basic functions.

In general, the results serve as solid proof that personalized online shopping, specifically through the use of very good search and product matching technologies, remains the top factor in customer loyalty of Jaipur's online retailers.

CONCLUSION

In conclusion, customization may be an effective technique for enhancing client loyalty and retention. Businesses may boost customer loyalty, client pleasure, and longevity by creating customized interactions. Personalization can also boost the likelihood of promoting and cross-selling products. However, organizations must exercise caution when implementing personalization, establishing a balance between individualization and confidentiality issues, and making sure that personalization initiatives are consistent with broader branding and message. Organizations who can effectively exploit personalization are going to gain a competitive edge in the competitive landscape as personalization remains a key part of modern advertising.

The study's results are an undeniable proof of the fact that personalization is crucial for customer loyalty in the e-commerce market of Jaipur. More crowded and competitive digital markets are becoming, the more powerfully definitive the customer's loyalty factor will be the online platform's personalization capability in delivering experiences that are+ relevant, efficient, and meaningful. Besides, regression analysis could tell that some personalize features specifically the customer's ability to get just what they need are the best indicators of loyalty. This reiterates the argument that customer's convenience, accuracy, and relevance occupy the topmost position in sustaining customer interaction.

While notifying and advertising alerts also have a hand in making customers loyal, the influence of these factors

seems rather weak when compared to personalization, giving an idea that the market is so mature that the customers only feel the personal and invasive communication. This can explain why the latest global united customer trends are the personalization-comfortable converging issues. It was also shown that age and income are not relevant if the factors of personalization are not considered, but on the other hand, there is a definite relationship with education. It could be the case, that people who are digitally active are more inclined to user-friendly features and are more able to get the most out of them.

The entire research, in general, establishes that personalization is not only a technological upgrade but also a strategic means for establishing long-lasting customer relations. It is evidently pointed out that even one of the most well-known e-commerce companies can double or triple customer loyalty by adopting the practices like AI-driven recommendations, smarter search algorithms, and user-centric website design. Thus, trust, transparency, and relevance are the values that are to be focused by businesses with a view of establishing a spectacular online environment that keeps an increasingly competitive digital environment in check by deepening customer relationships.

Limitation of the research

The small sample size is the major limitation of the research. In addition, the research only focused on single district of Rajasthan, which is Jaipur. Hence, the output cannot be generalized on entire population of Rajasthan. Furthermore, there are multiple factors that have direct impact on customer loyalty. Elimination of such factors in this predictive model can have adverse impact on the output.

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