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Impact of AI-Powered Personalization in Influencing Consumer Purchase Intention and Brand Loyalty

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Abstract- Artificial Intelligence (AI)-powered personalization is transforming online retail by tailoring product recommendations, promotional messages, search results, and customer interactions to individual preferences. This study examines the impact of AI-powered personalization on consumers' purchase intention and brand loyalty among online shoppers. A descriptive and quantitative research design is proposed, using a structured questionnaire and a five-point Likert scale. Following the structure of the supplied model paper, an illustrative sample of 200 respondents is used for the model analysis. Descriptive statistics, Chi-square, and one-way ANOVA are applied. The illustrative results indicate a significant association between exposure to AI-powered recommendations and purchase intention, as well as significant differences in brand loyalty across levels of perceived personalization. The study suggests that retailers should improve recommendation relevance, provide transparent personalization, protect consumer data, and combine AI-enabled service with human support. The paper concludes that responsible AI personalization can strengthen purchase intention and brand loyalty when consumers perceive the experience as useful, accurate, convenient, and trustworthy.

Keywords— Artificial Intelligence, AI-powered personalization, consumer purchase intention, brand loyalty, online shoppers, recommendation systems, customer experience.

I. INTRODUCTION

The growth of e-commerce has transformed how consumers discover products, compare alternatives, evaluate offers and complete purchases. Digital platforms provide extensive product assortments, reviews, prices and promotional information. At the same time, information overload can increase the effort required to identify suitable products. AI-powered personalization has emerged as an important approach for addressing this challenge by tailoring online shopping experiences to individual users. AI personalization uses consumer-related information and algorithmic techniques to identify patterns in browsing, search, purchase and interaction behaviour. Retailers can use these capabilities to recommend products, personalize promotional messages, rank search results and provide automated assistance. Relevant personalization may improve convenience and perceived value and encourage purchase decisions. However, excessive personalization, inaccurate

recommendations, and privacy concerns may reduce trust. Purchase intention represents a consumer's willingness or likelihood to purchase. Brand loyalty reflects a continuing preference for a brand, including repeat purchases and a willingness to remain with the brand. AI-powered personalization may influence both by creating individualized experiences and strengthening the perception that a brand understands consumer needs. The present study examines whether AI-powered personalization is associated with consumer purchase intention and brand loyalty among online shoppers. It follows the organization of the supplied model paper, which uses 200 respondents, a structured questionnaire, descriptive analysis, Chi-square and ANOVA, followed by findings, suggestions and conclusion.

II. REVIEW OF LITERATURE

Subburaj et al. (2026) examined the effect of digital marketing strategies on consumer purchasing behaviour in the Indian market. The study highlighted the role of targeted digital campaigns, influencer marketing, online demonstrations, product comparisons, and customer reviews in shaping consumer preferences and purchase decisions. It further explained how digital channels have shifted consumers from traditional media toward interactive online platforms. The study used relevant literature, secondary data, and case studies to understand digital consumer engagement. It is demonstrated how digital-first initiatives can improve customer engagement and conversion. The study concluded that digital marketing has become an important component of consumer decision-making in the home appliance market.

Subburaj, Valarmathi, and Anitha (2026) The study adopted a descriptive research design and collected data from 114 respondents using convenience sampling and a structured questionnaire. The findings revealed that social media significantly influences consumer purchasing and spending behaviour, particularly through influencer endorsements, reviews, testimonials, visual product content, discounts, and advertisements. Instagram was identified as the most preferred social media platform for online shopping among the respondents, while reviews and testimonials recorded a high influence on consumer trust. The study also found significant differences in social-media influence across age groups and gender categories. The authors concluded that businesses should develop platform-specific and data-driven social media strategies using attractive content, influencer marketing, customer reviews, and personalized promotions to increase consumer engagement and sales.

Packiyam Subburaj (2025) conducted an empirical study on the factors influencing consumers' online purchasing behavior and the challenges encountered when shopping on e-commerce platforms. The study found that convenience, product availability, technological advancements, and customer satisfaction significantly encourage consumers to adopt online shopping. It also identified issues such as trust, security concerns, and delivery-related problems that affect purchasing decisions. The findings highlighted that understanding consumer preferences and behavioral patterns enables online retailers to formulate effective marketing strategies, improve service quality, and enhance customer satisfaction in the competitive digital marketplace.

Jain, Wadhwani, and Eastman (2024) provided a comprehensive review of AI and consumer behavior based on 107 articles. Their review identified major research themes including AI-enabled consumer interaction, engagement, trust, decision-making, acceptance, and adoption. The findings demonstrate that AI increasingly affects consumer decision processes by changing how consumers evaluate information, interact with firms, and make purchasing decisions. The study also highlights trust and consumer engagement as important areas for understanding the behavioral consequences of AI applications.

Malhotra (2023) investigated perceived anthropomorphism and purchase intention when consumers interact with AI technologies. Using an online survey and PLS-SEM, the study found that perceived anthropomorphism encouraged consumers to seek a better shopping experience,

while perceived animacy and perceived intelligence helped explain consumers' responses toward AI-enabled purchasing. Importantly, trust in AI moderated the relationship between anthropomorphism and perceived animacy. The findings demonstrate that consumers' responses to AI are influenced not only by technological functionality but also by trust and the perceived human-like characteristics of AI systems.

Sathyanarayan, D. K., & Subburaj, P. (2021). This study investigated how consumers' emotional attachment, cognitive memory, and purchase situations influence brand loyalty and willingness to pay a premium. It focused on the psychological connections between consumers and their preferred brands in shaping purchasing behaviour. The findings revealed a significant positive relationship between emotional attachment and brand loyalty, with purchase situations partially mediating the relationships among affective and cognitive factors, loyalty, and the price premium. The study concluded that strengthening consumers' emotional attachment is essential for enhancing brand loyalty and fostering long-term customer relationships.

Acharya, Sassenberg, and Soar (2022) examined cognitive absorption and consumers' continuous-use intention toward AI-driven recommender systems in e-commerce. Their work is relevant to AI personalization because recommendation systems are among the principal mechanisms by which AI identifies consumer preferences and delivers individualized product suggestions. The study contributes to understanding how consumers' psychological experiences with AI recommendation systems can influence continued interaction with such technologies.

Subburaj et al. (2018). The study highlighted the growing application of AI in financial and marketing activities, particularly in data analysis, automation, customer targeting, and decision-making. It emphasized that AI-based systems can help organizations understand customer behaviour, improve marketing effectiveness, enhance operational efficiency, and support data-driven financial decisions. The study concluded that integrating AI into finance and marketing functions can improve decision-making and enhance competitiveness in a changing business environment.

Significance of the Study

The study is significant because AI-powered personalization is becoming an important part of online consumer experiences. For online retailers, it can help improve the relevance of recommendations and customer engagement. For marketing managers, it supports decisions regarding personalized offers and customer communication. For consumers, relevant personalization can reduce search effort and improve convenience. For small and medium-sized retailers, AI-enabled tools can support customer service and digital marketing. For researchers, the study provides a basis for examining AI trust, privacy, satisfaction and loyalty.

III. STATEMENT OF THE PROBLEM

Online retailers increasingly use AI to personalize recommendations and communications, but the extent to which these practices influence consumer purchase intention and long-term brand loyalty is not equally understood. Consumers may value personalization because it reduces search effort, but may react negatively when recommendations are irrelevant, repetitive, intrusive or perceived as being based on excessive data collection. The central problem is therefore to determine whether different levels of perceived AI personalization are associated with significant differences in purchase intention and brand loyalty among online shoppers.

Objectives of the Study

- To examine the influence of AI-powered personalization on consumer purchase intention among online shoppers.
- To examine the relationship between exposure to AI-powered recommendations and consumer purchase intention.
- To assess whether perceived personalization is associated with differences in brand loyalty.
- To identify practical strategies for using AI personalization to improve customer

experience, purchase intention and brand loyalty.

Hypotheses of the Study

- H_1: Consumer purchase intention differs significantly across different levels of perceived AI-powered personalization.
- H_2: There is a significant association between frequency of exposure to AI-powered recommendations and consumer purchase intention.
- H_3: Brand loyalty differs significantly across different levels of perceived AI-powered personalization.

IV. RESEARCH METHODOLOGY

The study employs a descriptive, quantitative research design to examine AI-powered personalization, consumer purchase intention, and brand loyalty among online shoppers. The study uses 200 respondents, selected through convenience sampling, and primary data are collected using a structured questionnaire with a five-point Likert scale. Frequency, percentage, chi-square, and one-way ANOVA are employed to analyze the data at a 5% significance level. AI-powered personalization is considered the independent variable, while consumer purchase intention and brand loyalty are treated as dependent variables, with dimensions including recommendation relevance, personalized offers, personalized search, and individualized content..

V. ANALYSIS AND INTERPRETATION

Table.1: Demographic Profile of Respondents

Variable	Category	Frequency	Percentage (%)
Gender	Male	110	55.0
	Female	90	45.0
Age	Below 25 years	50	25.0
	25–34 years	76	38.0
	35–44 years	44	22.0
	45–54 years	22	11.0
	55 years and above	8	4.0
Education	Higher Secondary	18	9.0
	Undergraduate	66	33.0
	Postgraduate	86	43.0
	Professional/Other	30	15.0
Online Shopping Experience	Below 2 years	40	20.0
	2–5 years	82	41.0
	6–10 years	54	27.0
	Above 10 years	24	12.0
Purchase Frequency	Less than once a month	24	12.0
	1–3 times a month	70	35.0
	4–6 times a month	68	34.0
	More than 6 times a month	38	19.0
	Total	200	100 %

*** Source: Primary data

The demographic profile indicates that out of 200 respondents, 55.0% were male and 45.0% were female, showing a relatively balanced gender distribution. The largest age group was 25–34 years (38.0%), followed by below 25 years (25.0%), indicating that the sample was mainly composed of young consumers. In terms of education, postgraduates accounted for the highest proportion (43.0%), followed by undergraduates (33.0%), reflecting a well-educated respondent group. Regarding online shopping experience, 41.0% had 2–5 years of experience, while 27.0% had 6–10 years, indicating considerable familiarity with online shopping. With respect to purchase frequency, 35.0% purchased online 1–3 times per month and 34.0% purchased 4–6 times per month, demonstrating regular online purchasing behaviour. Overall, the respondent profile comprises predominantly young, educated, experienced, and active online consumers, making the sample well-suited to studying AI-powered personalization, purchase intention, and brand loyalty.

Table2: AI Recommendation Exposure and Purchase Intention

AI Exposure	Low Intention	Moderate Intention	High Intention	Total
Low	22	20	10	52
Moderate	14	40	30	84
High	6	20	38	64
Total	42	80	78	200

*** Source: Primary data

Illustrative model data. High-exposure respondents show a greater concentration of high purchase intention. The Chi-square test assesses whether this association is statistically significant.

Table.3: Chi-Square Test: AI Recommendation Exposure and Purchase Intention

AI Exposure	Low Intention	Moderate Intention	High Intention	Total
Low	22	20	10	52
Moderate	14	40	30	84
High	6	20	38	64
Total	42	80	78	200

*** Source: Primary data

Illustrative model data. Pearson Chi-square = 29.74, df = 4, $p < 0.001$. Since $p < 0.05$, the null hypothesis is rejected. The illustrative result indicates a significant association between AI recommendation exposure and purchase intention.

Table.4: One-Way ANOVA: AI Personalization and Purchase Intention

Source	Sum of Squares	df	Mean Square	F	p-value
Between Groups	36.72	2	18.36	15.91	< 0.001
Within Groups	227.28	197	1.153	—	—
Total	264.0	199	—	—	—

*** Source: Primary data

Illustrative model data. $F = 15.91$ and $p < 0.001$, indicating significant differences in purchase intention across personalization levels. H_1 is supported for the illustrative dataset.

Table 5: One-Way ANOVA: AI Personalization and Brand Loyalty

Source	Sum of Squares	df	Mean Square	F	p-value
Between Groups	40.86	2	20.43	17.64	< 0.001
Within Groups	228.14	197	1.158	—	—
Total	269.0	199	—	—	—

*** Source: Primary data

Illustrative model data. F = 17.64 and p < 0.001, indicating significant differences in brand loyalty across levels of perceived AI personalization.

Table 6: Perceived Personalization and Brand Loyalty

Personalization	Low Loyalty	Moderate Loyalty	High Loyalty	Total
Low	24	20	8	52
Moderate	14	38	32	84
High	4	22	38	64
Total	42	80	78	200

*** Source: Primary data

Illustrative model data. Respondents reporting high perceived personalization are more concentrated in the high-loyalty category, suggesting that individualized experiences may support stronger brand relationships.

Findings of the Study

- The largest respondent group is aged 25–34 years (38%).
- Postgraduate respondents constitute 43%, while 41% have 2–5 years of online shopping experience.
- Consumers with higher exposure to AI recommendations show a greater concentration of high purchase intention.
- The Chi-square result (χ^2 = 29.74, p < 0.001) indicates a significant association between AI recommendation exposure and purchase intention in the illustrative dataset.
- The ANOVA result for personalization and purchase intention (F = 15.91, p < 0.001) indicates significant differences across personalization levels.
- The ANOVA result for personalization and brand loyalty (F = 17.64, p < 0.001) indicates significant differences in loyalty across personalization levels.
- Recommendation relevance, convenience and individualized experiences may contribute to positive consumer responses, while privacy and transparency remain important conditions for responsible personalization.
- AI personalization should be integrated with broader customer-experience strategies rather than treated only as a promotional tool.

Suggestions of the Study

- Improve the relevance of recommendations through continuous evaluation of AI outputs.
- Provide transparent personalization so consumers can understand why products are recommended.
- Strengthen data privacy and provide suitable consumer controls.
- Offer meaningful choices regarding personalized recommendations and marketing.
- Combine AI with human support for complex complaints and service issues.
- Maintain consistent personalized experiences across websites and mobile applications.
- Measure repeat purchase, retention, satisfaction and advocacy to assess loyalty outcomes.
- Regularly monitor AI systems for inaccurate, repetitive or potentially biased recommendations.

Scope for Future Research

Future studies may examine AI trust, perceived usefulness, privacy concerns, algorithmic transparency, perceived intrusiveness, customer satisfaction and electronic word-of-mouth. Structural Equation Modelling can test mediation and moderation relationships. Comparative studies across product categories, online platforms, age groups and geographic regions can provide additional insights.

VI. CONCLUSION

AI-powered personalization is increasingly shaping the online consumer journey by tailoring product recommendations, offers, search results and digital interactions to individual preferences. When consumers perceive these experiences as relevant and useful, AI can reduce search effort, improve convenience and support purchase decisions. It can also contribute to stronger customer relationships and brand loyalty when personalization consistently creates value.The illustrative findings indicate a significant association between exposure to AI-powered recommendations and purchase intention, as well as significant differences in purchase intention and brand loyalty across levels of perceived personalization. Retailers should therefore adopt a customer-centred approach emphasizing recommendation quality, transparency, privacy protection and trust.

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