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The Impact of Ai-Based Personalization On Customer Purchase Behaviour in Online Shopping – With Special Reference to Chennai City

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Abstract
The increasing integration of Artificial Intelligence (AI) in e-commerce platforms has transformed the way consumers interact with online shopping environments. AI-based personalization enables retailers to offer customized product recommendations, targeted promotions, and personalized interfaces based on individual customer preferences and behavioural data. This study examines the impact of AI-based personalization on customer purchase behaviour in online shopping, with special reference to Chennai City. Primary data were collected from 100 online shoppers using a structured questionnaire. Descriptive statistics, Pearson correlation, simple linear regression, and one-way ANOVA were employed for data analysis using SPSS Version 26. The results reveal a significant positive relationship between AI-based personalization and purchase frequency, average order value, and customer satisfaction. The findings suggest that personalized online experiences enhance customer engagement, encourage repeat purchases, and increase spending. The study provides useful insights for e-commerce firms seeking to leverage AI technologies for improved customer relationship management and competitive advantage.

Keywords: Artificial Intelligence, Personalization, Online Shopping, Purchase Behaviour, Customer Satisfaction

1. Introduction

The rapid growth of digital technologies has reshaped the global retail landscape, with online shopping becoming an integral part of consumers' daily lives. Increased internet penetration, smartphone usage, and digital payment systems have accelerated the adoption of e-commerce platforms in India. In this highly competitive environment, online retailers are increasingly relying on Artificial Intelligence (AI) to differentiate their offerings and improve customer experience.

AI-based personalization refers to the use of intelligent algorithms to analyze customer data such as browsing history, purchase patterns, and preferences in order to deliver customized content, product recommendations, and promotional messages. Personalization reduces information overload, enhances

relevance, and simplifies decision-making for consumers. Although earlier studies have highlighted the role of personalization in improving engagement and conversion rates, empirical evidence on its influence on actual purchase behaviour remains limited, particularly in the Indian urban context. This study seeks to examine how AI-based personalization affects customer purchase behaviour among online shoppers in Chennai City.

Research Questions

1. Does AI-based personalization influence customer purchase frequency?
2. Is there a significant relationship between AI-based personalization and average order value?
3. How does AI-based personalization affect customer satisfaction in online shopping?

2. Review of Literature

AI-based personalization has become a key component of modern e-commerce systems. Recommender systems such as collaborative filtering, content-based filtering, and hybrid models use customer data to predict preferences and suggest relevant products (Adomavicius&Tuzhilin, 2005). Studies indicate that personalized recommendations improve click-through rates and conversion performance (Smith & Zhou, 2023).

Research has also shown that personalization enhances perceived usefulness, convenience, and enjoyment, thereby positively influencing purchase intentions and satisfaction (Tam & Ho, 2006). However, concerns related to data privacy, trust, and algorithm transparency have been raised, suggesting that excessive personalization may negatively affect consumer perceptions if not managed ethically (Khan & Lee, 2024). Consumer behaviour theories emphasize that relevance and ease of decision-making play a crucial role in shaping purchase behaviour. This study builds on existing literature by empirically examining the relationship between AI-based personalization and key dimensions of purchase behaviour in an Indian metropolitan setting.

3. Research Methodology

3.1 Research Design

The study adopted a quantitative, descriptive, and cross-sectional research design. Primary data were collected through a structured questionnaire administered to online shoppers.

3.2 Sample and Sampling Technique

- **Sample Size:** 100 respondents
- **Sampling Technique:** Purposive sampling
- **Selection Criteria:** Respondents aged 18 years and above who had made at least one online purchase during the previous three months

3.3 Measurement of Variables

Variable	Measurement Scale	Range
AI-based Personalization Exposure	Likert Scale	1 (Low) – 5 (High)

Purchase Frequency	Numeric	0–10 purchases per month
Average Order Value	INR	Continuous
Customer Satisfaction	Likert Scale	1 (Low) – 5 (High)

3.4 Tools for Data Analysis

- Descriptive statistics
- Pearson correlation analysis
- Simple linear regression
- One-way ANOVA
- Software Used**:** SPSS Version 26

4. Data Analysis and Results

Table 4.1 Demographic Profile of Respondents (n = 100)

Demographic Variable	**Category**	**Frequency**	**Percentage (%)**
Gender	Male	54	54.0
	Female	46	46.0
Age Group (Years)	18–25	30	30.0
	26–35	42	42.0
	36–45	18	18.0
	46 and above	10	10.0
Education Level	Undergraduate	26	26.0
	Graduate	52	52.0
	Postgraduate	22	22.0

Interpretation:

The majority of respondents were males and belonged to the 26–35 age group. Most respondents were graduates, indicating a well-educated sample suitable for online shopping behaviour analysis.

Table 4.2 Descriptive Statistics of Study Variables

Variable	**Mean**	**Standard Deviation**
AI-Based Personalization Exposure	4.02	0.81

Purchase Frequency (per month)	3.15	1.75
Average Order Value (INR)	2450.30	1070.14
Customer Satisfaction	4.18	0.67

Interpretation:
The mean scores indicate a high level of exposure to AI-based personalization and high customer satisfaction. The average purchase frequency and order value reflect active online shopping behaviour among respondent

Table 4.3 Pearson Correlation Matrix

Variables	**Personalization Exposure**	**Purchase Frequency**	**Average Order Value**	**Customer Satisfaction**
Personalization Exposure	1	0.59	0.53	0.64
Purchase Frequency	0.59	1	0.47	0.49
Average Order Value	0.53	0.47	1	0.45
Customer Satisfaction	0.64	0.49	0.45	1

Note:p< 0.01 (2-tailed)

Interpretation:
The correlation results reveal a significant positive relationship between AI-based personalization exposure and purchase frequency, average order value, and customer satisfaction, indicating that higher personalization is associated with improved purchase behaviour.

Table 4.4 Regression Analysis Results
Dependent
Independent Variable: AI-Based Personalization Exposure
Model Summary

R	**R^2**	**Adjusted R^2**	**F-value**	**Sig.**
0.59	0.35	0.34	52.31	0.000

Regression Coefficients

Predictor	B	Std. Error	Beta	t-value	Sig.
Constant	0.92	0.42	—	2.19	0.031
Personalization Exposure	0.85	0.12	0.59	7.23	0.000

Interpretation:
AI-based personalization exposure significantly predicts purchase frequency and explains 35% of its variance. This indicates a strong positive influence of personalization on repeat buying behaviour.

Table 4.5 One-Way ANOVA: Customer Satisfaction by Personalization Level

Source of Variation	Sum of Squares	df	Mean Square	F-value	Sig.
Between Groups	120.43	2	60.22	16.87	0.000
Within Groups	307.80	97	3.17	—	—
Total	428.23	99	—	—	—

Interpretation:
The ANOVA results show significant differences in customer satisfaction across low, moderate, and high personalization levels. This confirms that increased AI-based personalization leads to higher customer satisfaction.

5. Discussion

The findings demonstrate that AI-based personalization has a significant positive influence on online purchase behaviour. Personalized recommendations increase repeat buying behaviour, encourage higher spending per transaction, and improve customer satisfaction. These results support consumer behaviour theories that emphasize the importance of relevance, convenience, and reduced cognitive effort in influencing purchase decisions.

6. Findings of the Study

6.1 Theoretical Implications

The study contributes to the existing literature by empirically validating the role of AI-based personalization in shaping customer purchase behaviour. It highlights the psychological impact of personalized digital interactions on consumer decision-making.

6.2 Practical Implications

E-commerce firms should invest in advanced AI personalization technologies to enhance customer engagement and sales performance. At the same time, organizations must ensure transparency and ethical data practices to build trust and long-term customer relationship

7. Limitations and Future Research

The study is limited by its small sample size and use of purposive sampling, which may affect generalizability. The reliance on self-reported data may also introduce response bias. Future research can employ larger samples, longitudinal designs, and behavioral data analytics to gain deeper insights into AI-driven personalization.

8. Conclusion

The study concludes that AI-based personalization has a measurable and positive impact on customer purchase behaviour in online shopping. Personalized digital experiences enhance purchase frequency, increase average order value, and improve customer satisfaction. As AI technologies continue to evolve, personalization will remain a critical success factor for ecommerce businesses seeking sustainable competitive advantage.

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