
IMPACT OF AI-BASED PERSONALIZATION ON CONSUMER PURCHASE DECISIONS IN E-COMMERCE

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ABSTRACT

Artificial Intelligence (AI) has made a remarkable shift in the operation of online shopping platforms. The current study investigates the contribution of personalization using AI to online consumers' buying decision. The study used primary data collected through a structured questionnaire incorporating a five-point Likert scale comprising a sampling frame of 136 participants. The results were derived employing percentage analysis and mean score analysis. The results show that consumers recognize personalization techniques using AI. There still remain concerns regarding online consumers' personal data as well as personalization to great extent. The study offers important assistance to online shopping platforms to implement appropriate personalization strategies using AI.

Keywords: Artificial Intelligence, Personalization, E-Commerce, Consumer Behaviour, Purchase Decision

1. INTRODUCTION

The immense popularity of e-commerce has resulted in cut-throat competition among online shopping sites, which has forced them to opt for modern technologies to engage and retain consumers. In this context, Artificial Intelligence (AI) has proved to be a vital solution for online shopping sites to analyze consumer data and provide them with relevant product suggestions, ads, and shopping experiences. AI-based personalization is a mechanism to improve customer satisfaction with tailored content related to their preferences, browsing, and purchasing habits. Recently, AI-based personalization has become a determinant for prominent online shopping sites. Although personalization is a boon in terms of ease and efficiency, which has benefited online shopping sites, it has also resulted in a lack of concern for consumers regarding their personal and private details and their excessive reliance on online suggestions. It is therefore imperative to comprehend consumer attitudes toward AI-based personalization. This study aims to study the influence of AI-based personalization on consumer purchasing decisions regarding the concept of e-commerce.

2. REVIEW OF LITERATURE

The impact of personalized promotions using AI and impulse buying behavior on online shopping was investigated in a study carried out by Verma and Yadav in 2021. The results showed that personalized promotions and time-limited deals have the potential to induce impulse buying behavior, especially among Generation Y online shoppers. However, it was found that it has only a moderate impact on impulse buying behavior.

An article that considered consumer knowledge and perceptions towards AI applications in the field of marketing is by Davenport et al. (2020). In this article, it was found that even though consumers continue to be aware of AI-driven personalization, not many have a clear idea about data processing practices.

Smith et al. (2019) conducted a research on the use of personalization through AI in influencing the consumer behavior that occurs on the online platform. The research showed that personalization of product suggestions affects the purchase intention among the consumers. The researchers argued that the use of AI-based systems increases the level of engagement among the consumers, which results in effective decision-making, thus improving customer satisfaction. The researchers pointed out that personalization is a significant factor that ensures a competitive advantage for the online shopping platform.

Grewal, Roggeveen, and Nordfält argue that Grewal et al. (2017) conducted a study to test the usefulness of recommendation systems within a retail setting; the findings suggested that personal recommendations influence consumer trust and satisfaction positively. In this regard, the article highlighted that overreaching or incorrect recommendations could impair consumer trust in an automated system. Furthermore, the article asserts that AI systems should be accurate to gain consumer trust.

Awad & Krishnan (2006) examined consumer behavior concerning online personalization and privacy concerns. It was found that while convenience derived from personalization is positive, concerns about data privacy misuse affect consumer trust. The study concluded that organizations need to provide a positive personalization experience combined with effective protection strategies for consumers about personal data privacy.

3. RESEARCH GAP:

Although various researches have been conducted concerning AI-powered personalization and its effects on the purchase behaviors of consumers, most research is still limited to developed countries. The existing literature has mainly focused on individual factors, such as trust or impulse purchase, without providing a holistic perspective that encompassed consciousness, purchase decisions, impulse purchase behavior, and the concern for privacy collectively. Additionally, there has been a lack of empirical research concerning the effects of AI-powered personalization, both positive and negative, on youth consumers. The research problem is solved by the current research since the research aims to deliver a holistic investigation of AI-powered personalization and the effects of the phenomenon on the purchase decisions of consumers using e-commerce websites.

Objectives of the Study:

1. To study the level of awareness of AI-based personalization among e-commerce users.
2. To analyze the impact of AI-driven recommendations on consumer purchase decisions.
3. To examine consumer trust in AI-based personalized suggestions.
4. To study whether AI personalization leads to impulse buying.
5. To identify challenges and concerns related to AI personalization in e-commerce.

4. RESEARCH METHODOLOGY

The paper uses a descriptive-analytical design to analyze the effects of AI-based personalization on consumer purchase behavior. The primary data was collected using a structured questionnaire that was conducted using Google Forms. The structured questionnaire comprises demographic sections and 15 statements based on AI-based personalization, which used a five-point scale. A total of 136 responses using convenience sampling methods were considered valid. The responses include those of students, working individuals, and people frequently using online shopping platforms. The collected data was encoded for analysis using Microsoft Excel. Percentage analysis was used to analyze demographic details of participants, while mean score analysis was used to study perceptions along different parameters such as awareness level, decision to purchase, trust factor, impulse buying behavior, and difficulties faced by AI-based personalization.

5. DATA ANALYSIS AND INTERPRETATION

The demographic study showed that maximum respondents fell under the category of consumers belonging to 18-25 years of age. Gender proportion among respondents is relatively equal. More respondents preferred online shopping and considered Amazon, Flipkart, and Myntra as most preferred e-commerce websites.

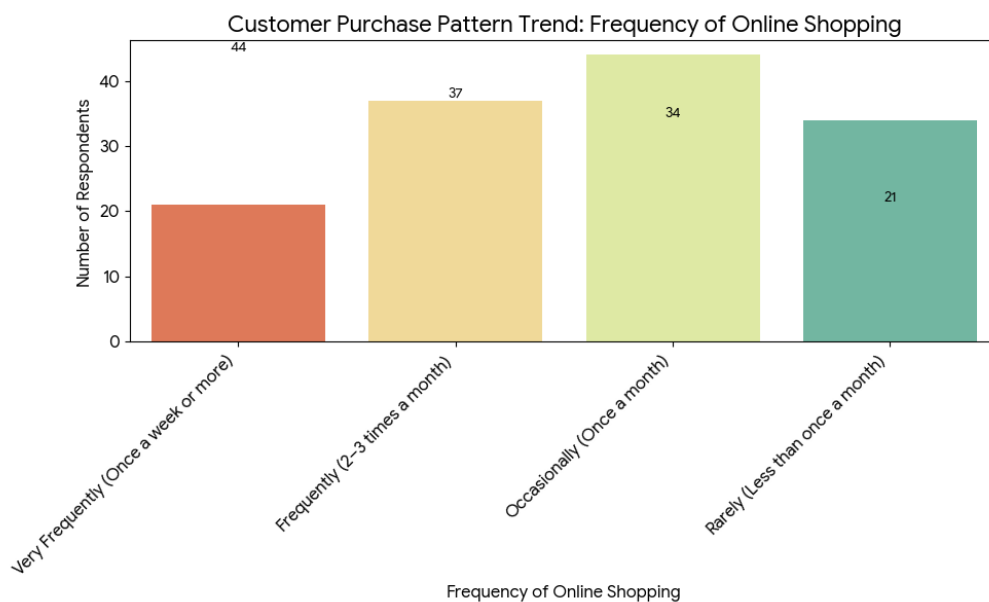


Figure 1: Customer Purchase Pattern Trend

In Figure 1 above, the general trend is that consumers are highly active on the online shopping platform since close to three-quarters of the population are active online shoppers. In regard to AI personalization, the findings are relevant to AI personalization projects that are directly interacting with consumers on a continuous basis via online personalization recommendations.

Table 1: Statement-wise Analysis of AI-Based Personalization

Code	Statement	Agree (%)	Mean
S1	Awareness of AI-based personalization	58.09	3.60
S2	Understanding use of browsing & purchase history	61.03	3.54
S3	Ability to identify personalized recommendations	51.47	3.53
S4	AI recommendations influence purchase decisions	35.29	3.28
S5	Likelihood of buying AI-recommended products	33.09	3.18
S6	Personalized suggestions save shopping time	50.00	3.51
S7	Trust in AI-generated recommendations	29.41	3.11
S8	AI recommendations match preferences	43.38	3.36
S9	AI personalization improves shopping experience	38.97	3.27
S10	AI recommendations encourage impulse buying	30.15	3.12
S11	Unplanned purchases due to AI suggestions	20.59	2.82
S12	Personalized offers increase impulse buying	35.29	3.16
S13	Concern over use of personal data	50.00	3.52
S14	Discomfort due to excessive personalization	44.85	3.49
S15	AI limits exposure to new products	47.79	3.49

Note: Agree (%) includes *Agree* and *Strongly Agree* responses.

Source: Compiled from primary survey data

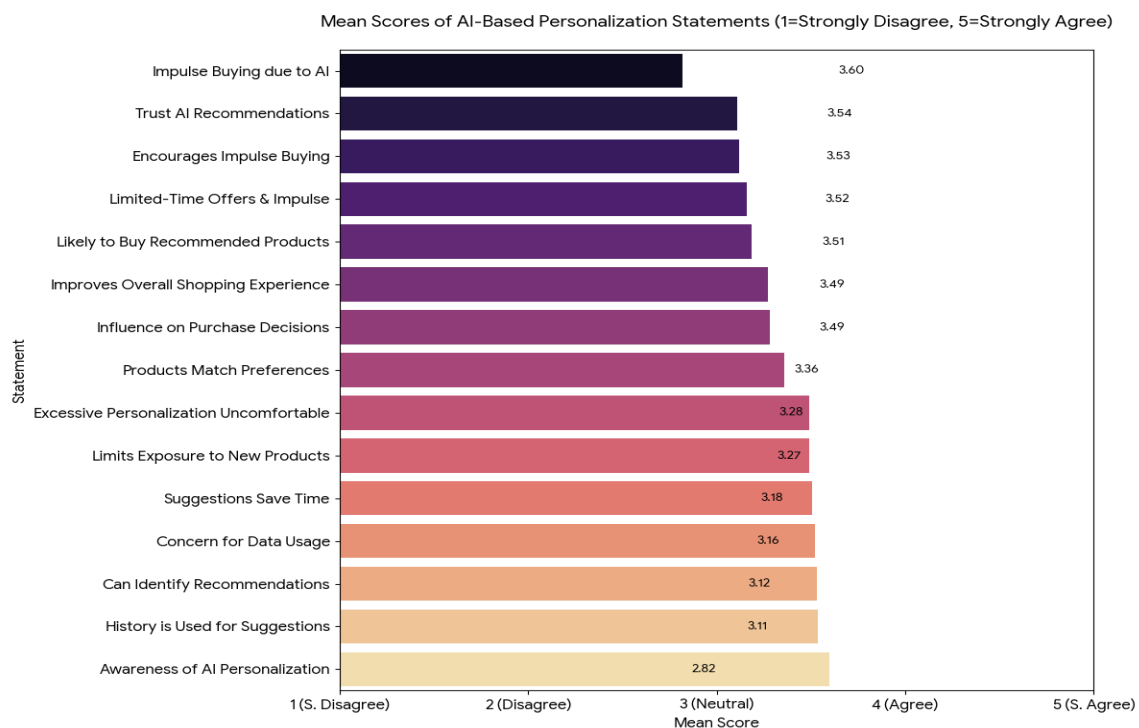
**Figure 2:** Mean Score of AI-Based Personalization Statement

Table 1 and Figure 2 provides a detailed statement-wise analysis of the perceptions of the consumers with regard to personalization using AI in the context of electronic commerce, on the basis of the level of agreements and the mean scores.

5.1 Awareness and Understanding of AI-Based Personalization

From the results, there is adequate evidence and limited ambiguity that the level of consumer knowledge regarding the application of AI for personalization in the e-commerce site is relatively high. Statement S1, regarding general knowledge of the application of AI for personalization, has an agreement level of 58.09% with an average score of 3.60, signifying positive acknowledgement among the respondents. Additionally, Statement S2, regarding the knowledge of the application of browsing and purchase behavior, showed the highest level of agreement with 61.03%, with an average score of 3.54, signifying that the respondents were conscious of the application of the personal information for catering to tailored recommendations. Statement S3

regarding the application of personalized recommendations while buying through online shopping also showed moderate levels of agreement with 51.47%, with an average score of 3.53, confirming that the respondents were capable of detecting the application of personalized recommendations while buying through an online shopping platform.

5.2 Influence on Purchase Decisions

The effect of AI-based personalization on the purchase decision seems to be moderate. The effect of AI recommendations on the purchase decision for the statement S4 was found to have an agreement measure of 35.29% and a mean measure of 3.28, signifying a slight positive effect. The effect of AI purchase recommendations for the statement S5 was found to have a measure of 33.09%, with the mean measure being 3.18. Conversely, statement S6, which measured the likelihood of buying AI-recommended purchase items, presented a stronger effect measure of 50.00%, with the mean measure of 3.51, emphasizing the effect of AI-based personalization in optimizing the efficiency and convenience of purchases.

5.3 Trust in AI-Generated Recommendations

The trust in AI recommendations is found to be moderate and measured. Statement S7 reflects an agreement of 29.41% with a mean of 3.11. It can be observed that the agreement is towards a neutral point. Statement S8 tends to measure the alignment of AI recommendations and consumer preferences. This statement reflects a relatively higher agreement of 43.38% at a mean of 3.36. Statement S9 measures the improvement in overall shopping experience due to AI-based personalization. This statement reflects a moderate agreement of 38.97% at a mean of 3.27. This points out that though consumers agree to the relevance of AI recommendations, complete trust in AI-based systems is yet to be attained.

5.4 Impact on Impulse Buying Behaviour

It seems that the role of personalization through AI in impulse buying behavior is limited. Statement S10, regarding the positive influence of impulse buying through AI recommendations, showed an agreement level of 30.15%, with an average of 3.12, indicating neutrality. Statement S11 showed the least level of agreement with the other statements (20.59%, average of 2.82) and clearly indicates that the recommendations made through AI do not have the tendency to induce impulse buying to any great extent. Statement S12 showed some level of moderate agreement (35.29%, with an average of 3.16) and indicates the marginal positive impact of personalized offers on impulse buying behavior.

5.5 Challenges and Consumer Concerns

One major theme that came out during analysis was the concern with AI-based personalization. Statement S13, related to the use of personal information, reached 50% agreement with a mean score of 3.52, depicting data privacy as a big concern for customers. Statement S14 indicated considerable discomfort caused by over-personalization, with 44.85% (mean = 3.49) and Statement S15 with concerns about limited exposure to new products because of algorithmic filtering, with 47.79% (mean = 3.49). These, in fact, emphasize the need to balance personalization with transparency and user control.

6. FINDINGS OF THE STUDY

The data analysis of the primary data shows that most people who participated in the study fall within the age brackets of 18 to 25 years, showing that young people are more likely to adopt the usage of e-commerce platforms. In regard to the first objective of studying the level of awareness concerning AI-powered personalization among e-commerce users, the data shows that the majority of people are well-aware that AI is employed for personalization purposes within online shopping platforms. The level of awareness is high among young individuals between the age brackets of 18 to 25 years.

In regards to the second objective, which focused on examining the effects of personalized recommendations generated by AI technology towards consumers' purchase decisions, the study concluded that AI-powered personalized recommendation has a positive effect on purchase behavior. In regards to the third objective, which focused on examining consumers' trust of personalized recommendations generated by AI technology, the study concluded a moderate trust in AI-generated personalized recommendations. Although consumers recognize their benefits, relying solely on personalized recommendations generated by AI technology is not yet established.

The fourth objective was to investigate whether personalization driven by AI leads to impulsive purchasing. The results point out that impulse buying behavior is minimally influenced by AI-based personalization. In regard to this, it has been established that consumers will not make unplanned purchases merely because they have been recommended by AI. This demonstrates a careful and full-of-thought purchasing disposition. Finally, consistent with the fifth objective-which sought to identify challenges and concerns as regards AI personalization-the

study highlights many apprehensions among respondents over data privacy issues and excessive personalization. The people interviewed feared that their data would be used and that the variety of products could be shut out due to algorithmic filtering.

Overall, the findings confirm that AI-based personalization plays a meaningful role in shaping online consumer behaviour while underscoring the importance of transparency, ethical data practices, and balanced personalization strategies for sustaining consumer trust.

7. SUGGESTIONS

Suggestions for e-commerce sites and policymakers, based on the outcomes of the study, are as follows for improving the efficacy of personalization using AI and synchronizing it with consumer sentiments: E-commerce sites need to enhance the level of transparency regarding the collection and subsequent use of consumer data for personalization through the use of AI, thus helping in improving the level of trust emanating from consumers. They need to sensitize consumers through effective communication regarding their policy and procedures for storing and handling personal data, thus helping in alleviating any fear levels of consumers regarding the use of personal information. Personalization software needs to be implemented in a balanced form and avoid being too targeted, which might give rise to feelings of unease and dissatisfaction among consumers. In addition to this, continuous work needs to be done on improving the accuracy levels of suggestions from the use of AI, thus resulting in boosting the confidence level among consumers regarding the suggestions produced through the use of AI for personalization purposes within e-commerce sites.

8. CONCLUSION

Conclusion drawn from the research indicates that AI personalization helps immensely in influencing the purchase decisions of the customer within the context of the e-commerce sector. Consumers are satisfactorily aware of the AI personalization methods and realize the importance and contribution of these AI methods in the form of improved convenience and efficiency of decision-making while shopping. Although the positive impact of AI recommendations has immensely helped shape the purchase decision of the customer, the level of trust among the masses with respect to these systems remains moderate, suggesting the cautious and limited acceptance of the recommendations provided through AI systems. Additionally, the impact of AI personalization remains limited within the context of impulse purchases, suggesting the deliberate nature of purchase decisions made by the customer.

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