

# A Study of the Impact of AI-Powered Recommendation Systems on Consumer Purchase Decisions in the E-Commerce Industry

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## Abstract

*Through personalized suggestions, the e-commerce industry has been affected so much that it has been overtaken by AI-powered recommendation systems. This paper examines the effects of AI-powered recommendations on online shoppers and how they influence product discovery, the engagement level of shoppers, and unplanned purchases. Emerging from the results of a survey of 55 graduates and MBA students, more than 70% of respondents claim that AI has helped them find new products, and over 60% confess to making unplanned purchases because of AI recommendations. On top of that, 56.5% of them enjoy the shopping experience improved by AI, and 75% prefer brands and platforms integrating AI-driven personalization. But as recently as 30% were neutral to their reliability, according to 30% of respondents. The results reveal that both AI-driven recommendation systems greatly influence online shopping behaviors, especially through personalization, transparency, and privacy measures, all of which must be improved to the utmost.*

**Keywords:** AI-powered recommendations, e-commerce, consumer behavior, product discovery, online shopping, personalization, purchase decisions, trust in AI, digital marketing, and customer engagement

## INTRODUCTION

E-commerce shopping has undergone a permanent transformation because customers now attain affordable pricing benefits combined with wide shopping choices through online platforms. Businesses achieve more customer interactions and increased sales from recommendation systems because these systems monitor customer activities and product choices after previous transactions [1].

AI recommendation engines use machine learning algorithms and big data analytics with deep learning techniques to forecast and shape customer selection. Technological platforms supported by Amazon and Netflix, alongside Alibaba, display customized product suggestions that generate better customer satisfaction and higher conversion numbers [2]. The recommendation systems benefit customers effectively, yet they generate security risks to data, along with privacy issues and doubts regarding the control of consumer choices [2, 3].

The effects of AI-based recommendation platforms on online consumers' buying choices represent a subject that has been investigated through research. Research has examined how these systems define customer operational patterns, observe sales effects, and identify obstacles during large-scale implementation [4].

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Received Date: April 03, 2025

Accepted Date: September 02, 2025

Published Date: February 07, 2026

**Citation:** Vrushang Mulekar, Mangesh Govalkar, Aftab Shaikh, Neena Katkar. A Study of Impact of AI-Powered Recommendation Systems on Consumer Purchases Decision in E-commerce Industry. Current Trends in Information Technology. 2026; 16(1): 1–6p.

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**Objectives and Hypothesis**

1. To analyze how AI-driven recommendations influence consumer choices in E-commerce.
2. To compare consumer engagement levels with and without AI recommendation in E-commerce.

**LITERATURE REVIEW****Role of AI-Powered Recommendation Systems in E-Commerce**

E-commerce popularity has increased considerably in recent years because of its convenience and affordable purchasing options. A few customers avoid buying online because of security doubts about convenience issues, initial trust issues, and the reliability of online shopping platforms. This research focuses on risk, trustworthiness, and convenience factors to evaluate how original trust affects buying intentions among Internet shoppers [5]. Trainees who frequently use the Internet will be the focus of research, and the study will take place within the Klang Valley region of Malaysia. The study employs structured questionnaires to obtain data that will undergo statistical examination using regression and mediation analysis techniques [6]. To contribute novel information about trust-influencing elements and their impact on purchase intention, the field of e-commerce benefits from this study. Online business operators can develop practical strategies to boost online buyers' purchasing intentions by providing convenient services, increasing credibility, decreasing purchase risks, and establishing trustworthiness [7].

**The Influence of Digital Marketing on Consumer Purchasing Decisions**

Researchers have studied the effects of digital marketing on changes in a consumer's decision-making procedure when it comes to the act of consumer buying. By analyzing both thematic breakdowns of interview data alongside its own analysis, the research establishes vital engagement and shopping factors [8]. Content and personalization turned out to be the success factor and were brought about by the recommendation that highlighted individual customer interaction, which increased engagement. Social platform users had a significant impact on purchase decisions through the sum of their content and/or endorsements, combined with the course of the ads. In particular, good photos and videos were visual elements that significantly affected customers' decisions, as they were made to feel more confident in buying or decoding the product [9]. Because they used strong time constraints and attractive discounts, promotional email campaigns worked. The functions of mobile marketing, mobile friendliness, and app notifications were good for customers, showing an increase in the use of mobile marketing. Finally, artificial intelligence was implemented in the shopping experience, that is, users were assisted in real time and were given personalized recommendations that only helped improve their satisfaction with the shopping experience. As it became the only means of ensuring customer loyalty and trust, data security and honest advertising were requisites that served as the basis for both. User-generated content really helped customers make a buying decision, and the omni-channel allowed for adequate, smooth, and adaptable shopping practices [10]. Different gamification features, such as interactive challenges and reward systems, were used to encourage customer motivation and participation. This case provides an excuse for the development of an advanced digital marketing plan using all the examined strategies to attract customers and increase sales. This study helps marketers understand how to make the best of their digital marketing methods in today's online environment [11].

**The Impact of Mobile Technologies on Consumer Behavior in Retail Marketing**

This research examines the effects of mobile technology on retail marketing consumer behavior because better mobile platforms have affected shopping and brand approach dynamics. Mobile technology enables customers to shop whenever they need to through their smartphones, thereby revolutionizing retail shopping. Consumer purchasing methods have undergone a major transformation as customers have adopted mobile purchasing more frequently than traditional methods [12]. Research findings demonstrate that custom-tailored customer experiences through mobile platforms drive better satisfaction levels and client engagement because they deliver personalized offers that rely on individual tastes. Customers demonstrate enhanced purchasing intention through better purchasing outcomes that stem from continuous access to updated product content and price-review services. The online

discovery of new products and direct shopping through social networks make social media and social commerce more critical in the market. Mobile shopping triggers impulsive spending because users can easily make fast online payments and receive promotional alerts that drive them to buy impulsively. Operations that combine mobile innovations with shop-based encounters have developed a unified shopping process that merges online and offline shopping elements. Current challenges in online commerce include data protection, information delegation, and privacy challenges. People grow exhausted by excessive marketing communications, while becoming increasingly aware of the security risks that arise from data collection. For success at present, merchants need to find a middle ground between utilizing mobile technology benefits and resolving existing problems.

### Research Design

The current research is a quantitative research design with a descriptive research design based on a survey aimed at assessing graduate and MBA students' awareness and perception of AI-driven personalized recommendations in e-commerce. The target population was online shoppers who were graduate and MBA students, and the sample selection was convenience sampling because of accessibility, using respondent number 55. In this study, a structured online questionnaire was distributed through Google Forms and social media platforms over a specific period, and data were collected.

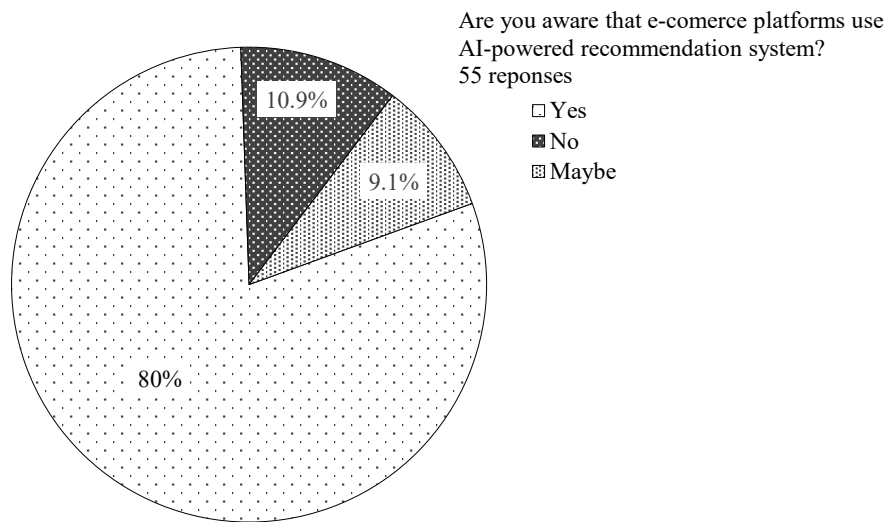
### RESULT FINDINGS AND ANALYSIS

- *Demographics:* Although the majority would truly apply to graduate and MBA students, the respondents themselves are predominantly male and belong to the 18–24 age group.
- *Online shopping behavior:* 92% of the respondents engaged in online shopping, and the majority shopped either weekly or occasionally. Most of the time, Flipkart and Amazon are used.
- *AI awareness:* 90.6% of the respondents noted that they knew that AI-provided recommendation systems affected their shopping activity (Figure 1).
- *Recommendation relevance:* Approximately 65% of respondents thought that AI-generated recommendations were slightly relevant, while 20% were neutral (Figure 2).
- About 50% have trust in AI recommendation suggestions, 30% are neutral.
- *AI drives sales:* 70% of the respondents agreed that AI-generated recommendations play a part in helping them discover products they were not initially looking for.
- As per the result, more than 60 respondents admitted to at least one unplanned purchase because of AI-powered recommendations.
- Approximately one in five respondents clicked on AI suggestions often or always, and more than half of the respondents clicked on AI suggestions at least sometimes.
- *Purchase decisions:* Around 40% of respondents say that AI recommendations moderately affect their purchasing decisions, 30% only have a small effect (Figure 3).
- *Shopping experience:* 48 of all respondents believe that AI-powered recommendations make the shopping experience more enjoyable (Figure 4).
- Approximately 40% spent less time browsing non-recommended products than manually searching, and 30% spent less time than doing so searching on recommended products.
- Relatively comfortable with AI in e-commerce: Over half of the respondents said they are comfortable using e-commerce stores that rely on AI recommendations compared to those that do not (Figure 5).

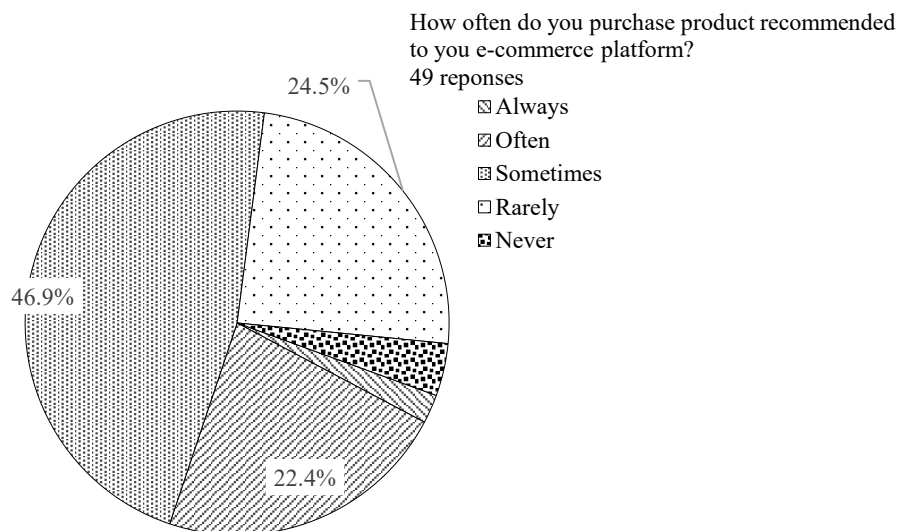
AI-powered recommendations are changing games by greatly improving product discovery, engagement, and impulse buying. Nevertheless, fear of trust and irrelevance implies that continued developments in AI personalization will enhance consumers' trust and satisfaction.

### Limitations

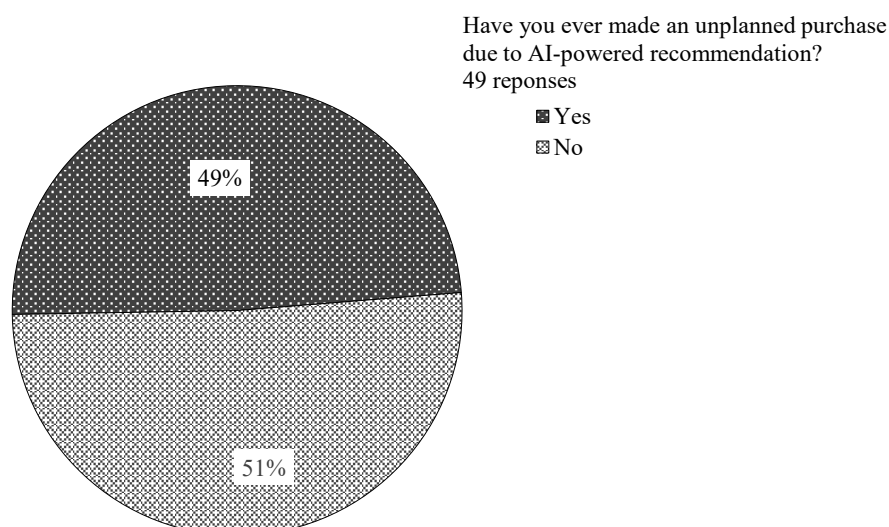
- The study was based on a small sample of 55 respondents, which limits its generalizability.
- External factors like ads, brand reputation, and discounts were not isolated.
- AI trust, bias, and data privacy concerns need deeper exploration.



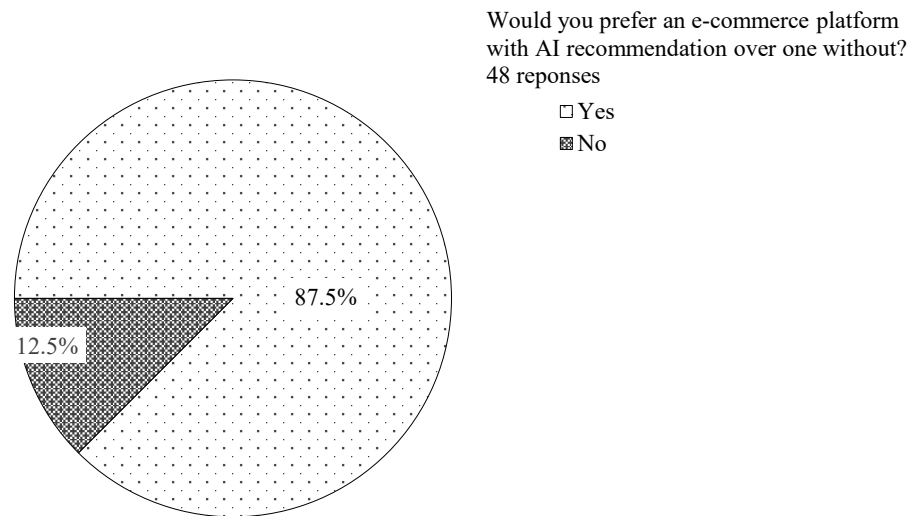
**Figure 1.** E-commerce platforms use AI-powered.



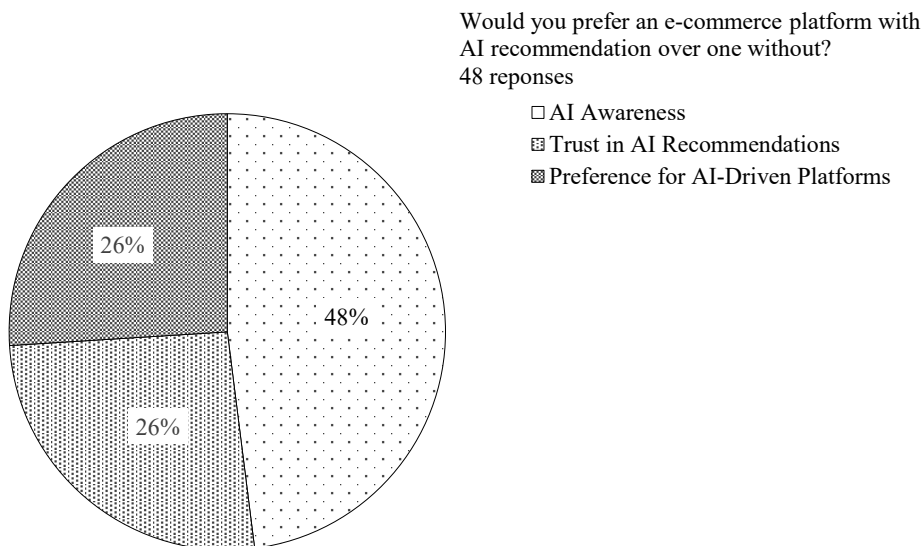
**Figure 2.** Purchase products recommended to E-commerce platform.



**Figure 3.** Unplanned purchase due to an AI-powered recommendation.



**Figure 4.** E-commerce platform with AI recommendations.



**Figure 5.** Relatively comfortable with AI in e-commerce.

## CONCLUSION

This study proves that AI-based recommendation systems significantly influence consumers' purchase decisions in the e-commerce segment. We find that AI-driven suggestions have an impact on product discovery, engagement of consumers, and unplanned purchases. A large number of respondents believe that AI recommendations are the best, and a great number of respondents want e-commerce platforms to use AI personalization. However, such AI-driven recommendations can enhance the shopping experience as well as sales, but have trust, reference, etc. However, there exists a piece of users neither for nor against the reliability of AI-powered suggestions, all in our stride of cultivating consumer confidence. From now on, e-commerce platforms will concentrate on improving recommendation algorithms and their credibility by practicing ethical AI and privacy issues. The biggest advantage of recommendation systems in the retail business is the balance between the automation provided by AI and the trust of customers.

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