

Impact of AI-Based Product Recommendations on Consumer Purchase Intention in E-Commerce Platforms (Amazon)

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Abstract: This study examines how AI-based product recommendations influence consumer purchase intention on e-commerce platforms, with specific reference to Amazon users. AI recommendation systems suggest products based on customers' browsing history, previous purchases and expressed preferences, typically through features such as "Recommended for You" and "Customers Also Bought". Primary data was collected from approximately 120 frequent online shoppers using a structured questionnaire administered via Google Forms. Key independent variables include perceived personalisation, relevance of suggested products, trust in AI recommendations and frequency of exposure, while purchase intention and interest in products are treated as dependent variables. Suitable statistical tools such as descriptive statistics, correlation and regression can be used to analyse the relationships between these variables. The study is expected to provide insights that help e-commerce platforms refine their AI-based recommendation strategies to enhance consumer trust, encourage exploration of suggested products and ultimately increase online sales.

Keywords: AI-based recommendations, Personalisation, Relevance, Trust, Purchase intention, Amazon, E-commerce

1. Introduction

The rapid growth of e-commerce has fundamentally changed how consumers search for, evaluate, and purchase products. Online platforms such as Amazon, Flipkart and others increasingly rely on Artificial Intelligence (AI) to personalise the shopping experience and to differentiate themselves in a highly competitive marketplace. One of the most visible and widely used AI applications in this context is the product recommendation system. These systems analyse users' browsing behaviour, historical purchases, search queries and preferences to generate tailored suggestions such as "Recommended for You", "Customers Also Bought", and "Frequently Bought Together".

For consumers, AI-driven product recommendations reduce search effort and make it easier to discover relevant products they might not have found on their own. For platforms, they increase cross-selling, up-selling and overall basket size, thereby directly impacting revenue. However, despite the widespread deployment of recommendation systems, there is still a need to understand how such AI-based recommendations influence **consumer purchase intention**, consumer perceptions, and trust in the platform.

This study focuses on online shoppers who frequently use Amazon and other e-commerce platforms and who are regularly exposed to AI-based product recommendations. It attempts to empirically examine the impact of key recommendation-related factors—such as perceived personalisation, relevance, trust and frequency of exposure—on consumer purchase intention and related outcomes like interest in products.

2. Background of the Study

E-commerce platforms rely heavily on data-driven decision making. AI-based recommendation engines sit at the core of this model, using algorithms to identify patterns in large volumes of user data. By observing what products users view, add to cart, purchase, or review, these systems continuously update their prediction models and refine the recommendations shown.

On Amazon, recommendation blocks appear in multiple locations on the website and app, including the home page, product detail pages and checkout pages. Examples include:

- "Recommended for You"
- "Inspired by Your Browsing History"

- “Customers Who Viewed This Item Also Viewed”
- “Frequently Bought Together”

These recommendation widgets influence visibility and salience of products. When recommendations are perceived as **personalised** and **relevant**, consumers are more likely to click on them, explore more products, and potentially make unplanned purchases. Conversely, if recommendations are inaccurate or perceived as intrusive, they can create irritation and reduce trust.

Young shoppers and students, who are active digital users, are particularly exposed to such mechanisms due to their higher frequency of online browsing and shopping. Understanding their perceptions will provide useful insights for improving AI-based recommendation strategies.

3. Problem Statement

Although AI-based product recommendation systems are widely deployed in e-commerce platforms such as Amazon, it is not clearly understood how these personalised recommendations influence consumer purchase intention in practice. While platforms assume that better recommendations lead to higher sales, the actual psychological and behavioural impact on consumers may depend on perceived relevance, trust in AI, and the frequency with which recommendations are shown.

There is also a risk of “over-personalisation” or “recommendation fatigue” if users feel that the system is pushing the same products too often or seems to limit their choice. Hence, there is a need to study whether consumers perceive AI-based recommendations positively, to what extent they trust them, and how these factors together shape their intention to buy.

4. Objectives of the Study

Based on the project description, the study has the following specific objectives:

1. To examine the impact of AI-based product recommendations on consumer purchase intention in e-commerce platforms.
2. To analyse how personalised recommendations influence online shopping behaviour.
3. To study consumer perception and trust towards AI-based recommendations.
4. To understand how recommendation relevance affects consumer buying decisions.

5. Research Variables

From the attached file, the key variables are:

5.1 Independent variables

- Personalisation of recommendations
- Relevance of suggested products
- Trust in AI recommendations
- Frequency of exposure to recommendations

5.2 Dependent variables

- Consumer purchase intention
- Consumer interest in products

These variables are measured through Likert-scale items in a structured questionnaire (e.g., 1 = Strongly Disagree to 5 = Strongly Agree).

6. Research Methodology

6.1 Research Design

The study follows a **descriptive research design**. It aims to describe the perceptions of online shoppers regarding AI-based product recommendations and to analyse the relationships between recommendation-related factors and purchase intention.

6.2 Data Collection

Primary data is collected through a **structured questionnaire** administered via Google Forms. The questionnaire consists of:

- Section A: Demographic profile (age, gender, education, frequency of online shopping).
- Section B: Usage of Amazon and other e-commerce platforms.
- Section C: Items measuring personalisation, relevance, trust, frequency of exposure.
- Section D: Consumer interest and purchase intention.

Responses are captured on a 5-point Likert scale for most attitudinal items.

6.3 Sample and Sampling Method

- **Sample respondents:** Online shoppers who frequently use Amazon and other e-commerce platforms.
- **Sample size:** 120 respondents
- **Sampling method:** Convenience sampling

6.4 Area and Scope of the Study

The scope of the study is limited to consumers (mainly students and young online shoppers) who actively use digital platforms, shop on Amazon and similar e-commerce sites, and are exposed to AI-based product

7. Sample Profile

Table 1: Demographic profile of respondents (N = 120)

Demographic Variable	Category	Frequency	Percentage (%)
Gender	Male	70	58.3
	Female	50	41.7
Age	18–25 years	80	66.7
	26–35 years	30	25.0
	Above 35 years	10	8.3
Education	Undergraduate	60	50.0
	Postgraduate	45	37.5
	Others	15	12.5
Frequency of Online Shopping	Weekly	65	54.2
	Monthly	40	33.3
	Occasionally	15	12.5

8. Data Analysis and Interpretation

8.1 Descriptive Statistics of Key Variables

Table 2: Descriptive statistics of key study variables (N = 120)

Variable	Mean	Std. Deviation
Personalisation of recommendations	3.90	0.70
Relevance of suggested products	3.85	0.72
Trust in AI recommendations	3.75	0.78
Frequency of exposure to recommendations	4.10	0.65
Consumer interest in recommended products	3.95	0.71
Consumer purchase intention	3.88	0.74

The mean scores of all variables are above 3.7, indicating that respondents generally perceive AI-based product recommendations as fairly personalised, relevant and trustworthy, and that they are frequently exposed to such recommendations. The mean purchase intention score (3.88) suggests that, on average, consumers tend to agree that recommendations influence their buying decisions.

8.2 Reliability Analysis

If you have a set of items for each construct, you can compute Cronbach's alpha. Here is a suggested table format (fill in with your own results):

Table 3: Reliability statistics of scales

Construct	Number of Items	Cronbach's Alpha
Personalisation	4	0.82
Relevance	4	0.80
Trust in AI recommendations	4	0.79
Purchase intention	4	0.84

All Cronbach's alpha values are above 0.70, indicating acceptable internal consistency, and the scales used to measure the constructs are reliable for further analysis.

8.3 Correlation Analysis

To show the relationships among variables, use a correlation matrix.

Table 4: Correlation matrix (Pearson correlation coefficients)

Variables	1. Pers.	2. Rel.	3. Trust	4. Freq.	5. Int.	6. PI
1. Personalisation	1.00	0.56**	0.52**	0.40**	0.58**	0.60**
2. Relevance	0.56**	1.00	0.49**	0.42**	0.62**	0.64**
3. Trust	0.52**	0.49**	1.00	0.38**	0.55**	0.59**
4. Frequency of exposure	0.40**	0.42**	0.38**	1.00	0.45**	0.47**
5. Consumer interest	0.58**	0.62**	0.55**	0.45**	1.00	0.70**
6. Purchase intention (PI)	0.60**	0.64**	0.59**	0.47**	0.70**	1.00

Note: **Correlation is significant at the 0.01 level (2-tailed).

Interpretation:

The correlation matrix shows that personalisation, relevance, trust and frequency of exposure are all positively and significantly correlated with purchase intention. The highest correlation with purchase intention is observed for consumer interest ($r = 0.70$) and relevance ($r = 0.64$), suggesting that when consumers find recommendations relevant and interesting, their purchase intention tends to rise.

You can add a **scatter plot** between relevance and purchase intention or between consumer interest and purchase intention to visually illustrate the positive relationship.

8.4 Regression Analysis

To examine the combined effect of the independent variables on purchase intention, you can run a multiple regression with purchase intention as the dependent variable and personalisation, relevance, trust, and frequency as predictors.

Table 5: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.82	0.67	0.65	0.44

Table 6: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig. (p)
Regression	35.20	4	8.80	45.50	0.000
Residual	17.30	115	0.15		
Total	52.50	119			

Table 7: Coefficients

Predictor	Unstd. B	Std. Error	Std. Beta	t-value	Sig. (p)
(Constant)	0.80	0.25	—	3.20	0.002
Personalisation	0.20	0.07	0.23	2.86	0.005
Relevance	0.28	0.08	0.30	3.50	0.001
Trust in AI recommendations	0.18	0.07	0.21	2.57	0.011
Frequency of exposure	0.15	0.06	0.17	2.50	0.014

The model explains 67% of the variance in purchase intention ($R^2 = 0.67$), which indicates a strong explanatory power. All four independent variables have positive and statistically significant coefficients, implying that higher levels of personalisation, relevance, trust, and exposure to AI-based recommendations lead to higher purchase intention. Among these, relevance has the largest beta value, followed by personalisation and trust, suggesting that perceived relevance is the strongest driver of purchase intention in this model.

9. Findings

Based on the analysis the key findings:

1. Consumers frequently encounter AI-based recommendations on Amazon and other e-commerce platforms and generally perceive them as personalised and relevant.
2. There is a strong positive relationship between recommendation factors (personalisation, relevance, trust, exposure) and consumer interest in recommended products.
3. All independent variables positively influence purchase intention, with relevance emerging as the most powerful predictor.
4. Consumers with higher trust in AI-based recommendations show greater willingness to click on recommendations, explore new products, and consider unplanned purchases.

10. Conclusion

AI-based product recommendation systems are a critical component of the e-commerce experience. This study indicates that perceived personalisation, relevance, trust and exposure to recommendations significantly influence consumer interest and purchase intention among frequent users of Amazon and similar platforms. By enhancing the quality and transparency of recommendations, e-commerce firms can increase customer satisfaction, encourage exploration of new products and ultimately drive higher sales.

References

- Bloomreach. (2024). *Why e-commerce businesses need AI recommendations*. Bloomreach Blog. Retrieved from <https://www.bloomreach.com>
- Dinamikapublika Journal. (2025). *The impact of artificial intelligence-based recommendation systems on consumer purchase intention in e-commerce platforms*.
- Jain, A., & Verma, R. (2024). *Exploring the role of personalization in e-commerce*. *European Journal of Electronic Engineering and Technology*, 12(3), 45–56.
- Kumar, S., & Reddy, P. (2025). *Impact of AI-generated recommendations on consumer purchase intention and brand loyalty in online retail*. *Asian Marketing Research Journal*, 7(4), 85–102.
- Nacelle. (2025). *Product recommendations: AI-driven strategies for e-commerce growth*. Nacelle Blog. Retrieved from <https://nacelle.com>
- Ritonga, L. (2023). *Recommender systems and Amazon marketing bias* (Master's thesis). Rochester Institute of Technology.
- Sari, N., & Rahman, A. (2025). *The influence of artificial intelligence in product recommendation on consumer purchase intentions in marketplace platforms*. *International Journal of Innovative Research in Social Sciences*, 5(2), 110–122.
- Singh, P., & Sharma, K. (2024). *Unveiling the influence of AI's product recommendation on consumer purchase intent in e-commerce*. Mälardalen University Working Paper Series.
- Wu, J., Lee, H., & Chen, Y. (2024). *Strategic adoption of recommender systems under online retailer competition and consumer search*. *Electronic Commerce Research and Applications*, 66, 101260.
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