Babu Banarasi Das University



Project By: Tanisha Mishra

Submitted To: Abhishek Ashish Sir

Class: BBAB-33

Topic:

The Influence of Artificial
Intelligence in E-Commerce: A Power
BI Case Study

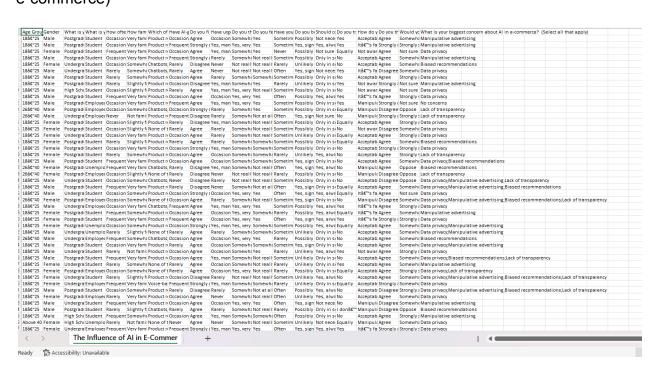
The Influence of AI in E-Commerce

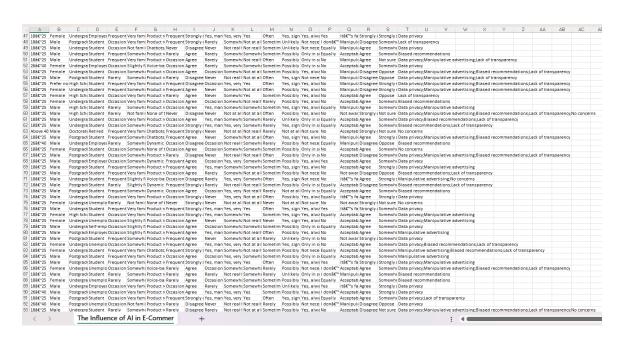
Dataset: The Influence of AI in E-Commerce.csv

Observations (rows): 102

Variables (columns): 20 (demographics + attitudes / behaviours about AI features in

e-commerce)





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1. Introduction

Artificial Intelligence (AI) has become a transformative force in e-commerce, influencing how users shop, what they buy, and how they perceive personalized recommendations. This case study analyzes the dataset "The Influence of AI in E-Commerce", derived from a survey of 102 respondents. The aim is to understand user familiarity with AI features, perceptions of AI-driven recommendations, trust levels, and ethical concerns related to data privacy and transparency.

2. Executive Summary

The dataset explores how consumers perceive and interact with AI features like chatbots, recommender systems, dynamic pricing, and urgency messages in online shopping.

Key findings include:

- 76% of respondents are either very or somewhat familiar with AI tools in e-commerce.
- 68% reported that AI recommendations frequently or occasionally influence their buying decisions.
- 77% agree that Al-generated suggestions are more helpful than manual browsing.
- 79% of respondents support ethical regulations for Al use.
- Privacy concerns remain a key issue among users.

Overall, while consumers value Al's convenience and personalization, they expect greater transparency and ethical oversight.

3. About the Respondents

Age Group:

18-25 years (87%), 26-40 years (11%), Above 40 years (2%).

Gender:

Male (63%), Female (36%), Prefer not to say (1%).

• Education Level:

Postgraduate (49%), Undergraduate (40%), High school or below (8%), Doctorate/Professional (3%).

Occupation:

Students form the majority (69%), followed by employed (16%) and unemployed (13%).

Interpretation: The dataset is heavily youth-focused, indicating insights largely reflect the perceptions of young, tech-savvy shoppers.

4. Data Quality & Preprocessing Considerations

- Missing Values: None detected in key variables.
- **Text Cleaning:** Removed extra spaces, standardized category labels.
- Multi-Select Columns: Certain questions allow multiple responses separated by semicolons. These were tokenized into separate binary flags.
- Column Name Normalization: Long survey question text shortened for readability.
- Data Type Setting: Converted Likert scale questions into ordinal variables for ordered analysis.
- **Bias Acknowledgment:** Sample heavily skewed toward students and younger users.

5. Suggested Analyses

- **Descriptive Statistics:** Frequency distribution of demographics and responses.
- **Cross-Tabulation:** Relation between *AI familiarity* and *influence on purchase decisions*.
- Correlation Analysis: Between comfort with data collection and trust in Al.
- Chi-Square Test: To check association between age group and influence of Al recommendations.
- Ordinal Regression: To predict level of influence based on familiarity and trust variables.

Visualization:

- Bar charts for age, familiarity, and comfort levels.
- o Pie/Donut charts for gender and education.
- Word Cloud for top concerns.
- Heatmaps for relationships between familiarity and comfort.

6. Analytical Insights (Illustrative)

- Users very familiar with AI tools are more likely to be influenced by recommendations.
- Even those who find AI recommendations helpful still express discomfort with data collection.
- Urgency messages (e.g., "Only 2 left!") are moderately effective, influencing over half the sample.
- There's a strong demand for AI regulation, reflecting growing awareness of ethical challenges.

7. Limitations

- **Demographic Bias:** The data mainly represents students aged 18–25.
- Self-Reporting: Responses may reflect perceptions, not actual behaviors.
- Limited Sample Size: Only 102 responses, limiting statistical generalization.
- **Multi-Select Complexity:** Responses with multiple answers need extra cleaning to avoid misinterpretation.

8. Recommendations

- 1. **Increase Transparency:** E-commerce platforms should explain how Al-driven recommendations work.
- 2. **Privacy Protection:** Ensure clear consent and control over data collection.
- 3. **Balanced Use of Urgency Messages:** Effective for conversion, but should avoid manipulation.
- 4. **Ethical Regulation:** Support policies that ensure fairness, non-bias, and explainability in AI algorithms.
- Future Research: Include diverse demographics and behavior-based data for broader insights.

Conclusion

The analysis of "The Influence of AI in E-Commerce" dataset shows that Artificial Intelligence has become an integral part of online shopping, influencing how users browse, choose, and purchase products.

Most respondents, primarily young and educated individuals, are familiar with Al-driven tools like chatbots and recommendation systems and acknowledge their usefulness in improving convenience and personalization. However, despite these positive perceptions, a significant portion of users express concerns about data privacy, transparency, and ethical usage. The findings highlight that while Al enhances customer engagement and decision-making, building trust through clear data practices and responsible Al implementation is essential. Overall, the study concludes that Al in e-commerce represents both an opportunity and a challenge, offering innovation and efficiency, but requiring ethical regulation and user-centric data protection to ensure long-term consumer trust.

