

THE IMPACT OF AI ON CONSUMER BUYING BEHAVIOUR IN E-COMMERCE PLATFORM: A STUDY CONDUCTED IN KARNATAKA

Author Name¹: Chaitanya.B,

Second Author Name² : Madhunayaka

MBA Student,Vidya Vikas Institute of Engineering and Technology ,Mysuru

Assistant Professor, Vidya Vikas Institute of Engineering and Technology, Mysuru.

ABSTRACT

Artificial Intelligence (AI) has transformed the e-commerce industry by providing personalized recommendations, visual search, and dynamic pricing that influence consumer buying behaviour. This study examines the impact of AI on consumer buying behaviour in e-commerce platforms in Karnataka. The research adopted a descriptive research design using both quantitative and qualitative approaches. Primary data were collected from 55 respondents through a structured Google Form questionnaire using convenience sampling. Descriptive statistics and the Chi-square test were used to analyse the data. The findings indicate that AI-enabled features positively influence consumers' purchase decisions, shopping convenience, trust, and satisfaction. Personalized recommendations and visual search features encourage greater engagement and increase purchase intentions. The Chi-square test revealed a statistically significant relationship between AI features and consumer buying behaviour, leading to the rejection of the null hypothesis. The study concludes that AI plays an important role in enhancing the online shopping experience and supports the growth of e-commerce in Karnataka while emphasizing the need for transparency and consumer data privacy.

INTRODUCTION

In the Networked economy, the connection of Artificial Intelligence (AI) and electronic commerce has fundamentally altered the pattern of retail. E-commerce platforms are no longer fixed online stores instead, they have evolved into dynamic, smart network capable of forecasting, shaping, and responding to human wants in real time. The foundation of this transformation is the change of consumer buying behavior—the complex psychological and behavioral process through which individuals discover, evaluate, select, and purchase goods online. While global trends offer a macroeconomic view, regional ecosystems provide critical, Detailed insights into how these technologies are adopted. The state of Karnataka, India, serves as an Model representation for this study. Analysis and Identification: E-commerce has shifted away from Inflexible keyword text boxes where spelling mistakes

affected search accuracy. Algorithms now track clicks, watch-time, and browsing history to automatically push relevant items directly toward consumer feeds. Language and Accessibility: Voice assistants and chatbots instantly process a blend of Kannada and English (Kannada-English code-switching). This makes online platforms accessible to users in tier-2 and tier-3 cities like Hubballi, Mangaluru, and Belagavi who once avoided apps due to language barriers. Decision-Making and Trust: The human effort of comparing prices, reading thousands of text reviews, and hunting for deals is minimized. Real-time visual search allows users to upload photos to find identical items, while automated emotion instantly judge product quality, accelerating the final purchase decision. Immersive Shopping: Visual try-on features use 3D computing and computer vision to let buyers virtual try on cloths, cosmetics, or eyewear onto 3D digital avatars. Similarly, furniture can be virtually projected into an actual living room before buying, which dramatically cuts down product return rates. Autonomous Replenishment: Advanced technology assess household usage patterns. Instead of users personally searching for daily essentials and groceries, systems forecast the depletion of goods and automatically place orders, shifting the buyer's role from active shopping to simple approval.

REVIEW OF LITERATURE

Umashankar (2024), in his study on machine learning-based consumer segmentation in Karnataka's e-commerce sector, found that AI improves personalized marketing and customer targeting through real-time data analysis. However, concerns regarding privacy and algorithmic bias continue to influence consumer trust. **Chotai (2025)** examined the impact of AI-powered recommendation systems on consumer behaviour and reported that personalized recommendations enhance shopping convenience and increase purchase intentions, while traditional marketing remains important for building long-term loyalty. **Roy (2024)**, in a study on hyper-personalized AI marketing strategies, observed that personalized product suggestions increase consumer engagement and purchasing likelihood. However, a lack of transparency in AI-generated content can reduce trust among consumers. **Kavitha Yadav (2024)** analyzed AI-driven pricing and recommendation mechanisms in Bengaluru's online apparel sector and found that dynamic pricing positively influences consumer purchasing decisions. **Mishra (2024)** explored consumer responses to AI-enabled e-commerce platforms and highlighted differences between urban and rural consumers, particularly regarding localized content and ease of use. **Wang et al. (2023)** applied the Technology Acceptance Model (TAM) to AI-enabled e-commerce and concluded that perceived usefulness and ease of use significantly affect consumer acceptance and purchase intentions. **Monica George (2025)** investigated predictive deep-learning algorithms and found that personalized offers and time-sensitive recommendations encourage impulse buying among younger consumers. **Panwar (2024)** studied AI-based nudging techniques such as scarcity alerts and social proof notifications and concluded that these tools

positively influence consumer decision-making. **Madanchian (2024)** analyzed the broader impact of AI and deep learning on global e-commerce trends and found that AI improves shopping efficiency, although excessive personalization may create consumer discomfort. **Pardeshi et al. (2023)** examined natural language processing and recommendation systems in e-commerce and reported that these technologies improve product discovery, customer satisfaction, and the overall online shopping experience.

STATEMENT OF THE PROBLEM

Despite the Quick integration of artificial intelligence (AI) tools like predictive recommendation engines, visual searches, and conversational chatbots on e-commerce platforms, there remains a major shortfall in understanding how these technologies influence wide ranging customers segmentation across Karnataka. While urban tech hubs like Bengaluru adapt effortlessly to Automated customization, Tier-2 and Tier-3 regions in the state display contrasting levels of digital literacy, linguistic preferences, and lack of trust regarding automated data privacy. Consequently, local e-commerce businesses lack localized empirical frameworks to balance aggressive AI customization against regional consumer concerns, leading to sub-optimal conversion rates and marketing inefficiencies. This study addresses this gap by investigating the direct impact of various AI-driven features on the purchase purpose and final buying behavior of online shoppers across different socio-demographic segments in Karnataka.

NEED FOR THE STUDY

The rapid growth of e-commerce across India has transformed the retail sector, yet regional markets like Karnataka present a unique, divided digital ecosystem that demands targeted empirical investigation. On one end, the state hosts Bengaluru, an aggressive tech hub populated by early adopters who interact effortlessly with cutting-edge artificial intelligence (AI) mechanisms such as predictive methods, hyper-personalized visual search feeds, and autonomous chatbots. On the other end, Tier-2, Tier-3 cities and rural districts are witnessing a rapid growth in internet penetration, bringing in millions of new internet users who possess entirely different technology skills, cultural expectations, and language preferences.

Conducting a localized study in Karnataka is important to understand the difficulty points where automated convenience meets cultural and socio-demographic hesitation. This research provides e-commerce platforms, regional marketers, and technology developers with a exact behavioural blueprint. It shows exactly how various AI touch points influence both practical and emotional shopping values across the state's diverse urban-rural divide. Ultimately, this study offers actionable, research insights to help digital retailers design transparent, localized, and ethically balanced AI systems that respect consumer trust while driving economic growth.

OBJECTIVES

To analyze the impact of AI on consumer buying behaviour in e-commerce platforms.

To examine the influence of AI features on purchase decisions.

To evaluate the effect of AI on consumer satisfaction and trust.

HYPOTHESES

Null Hypothesis

There is no significant impact of Artificial Intelligence (AI) on consumer buying behaviour in e-commerce platforms in Karnataka.

Alternative Hypothesis

There is a significant impact of Artificial Intelligence (AI) on consumer buying behaviour in e-commerce platforms in Karnataka.

RESEARCH METHODOLOGY

The present study include both quantitative and qualitative methods to collect, analyse, and interpret data.

RESEARCH DESIGN

For the present study, a descriptive research design has been adopted to examine the impact of Artificial Intelligence (AI) on consumer buying behaviour in e-commerce platforms in Karnataka. The study focuses on understanding consumers' perceptions, preferences, and purchase decisions influenced by AI features such as personalized recommendations, and targeted advertisements.

SAMPLING DESIGN

For the present research, data was collected through a Google form questionnaire using a convenience sampling technique from consumers in Karnataka who use e-commerce platforms for online shopping.

SAMPLING TECHNIQUES

The present research is a non-probability convenience sampling technique to collect responses from consumers who use e-commerce platforms in Karnataka.

SAMPLING UNIT

The sampling unit consists of individual consumers who are living in Karnataka who have experience using e-commerce platforms for online shopping.

SAMPLING SIZE

For the sampling size 55 respondents selected from different regions of Karnataka.

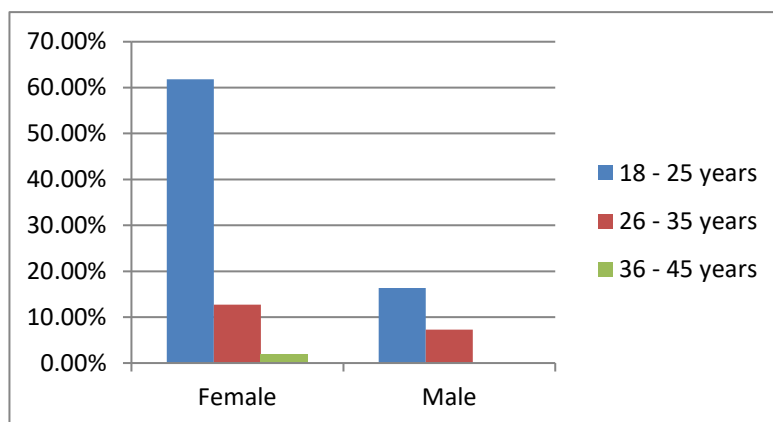
Age group				
Gender	18 - 25 years	26 - 35 years	36 - 45 years	Grand Total
Female	61.82%	12.73%	1.82%	76.36%
Male	16.36%	7.27%	0.00%	23.64%
Grand Total	78.18%	20.00%	1.82%	100.00%

Data Analysis:

The table shows the age-wise and gender-wise distribution of 55 respondents. Among them, 76.36% are female and 23.64% are male. The majority of respondents (78.18%) belong to the 18–25 years age group, followed by 20.00% in the 26–35 years age group and only 1.82% in the 36–45 years age group. Female respondents aged 18–25 years form the largest group (61.82%), while there are no male respondents in the 36–45 years age group.

Interpretation:

The survey mainly consists of young respondents aged 18–25 years, with female participants forming the majority. This indicates that young female consumers are more active in using e-commerce platforms and are more represented in the study. The low participation of respondents aged 36–45 years suggests that the survey findings mainly reflect the opinions and shopping behavior of younger consumers.



The "products recommended for you" sections on e-commerce platforms accurately reflect my personal tastes and needs.

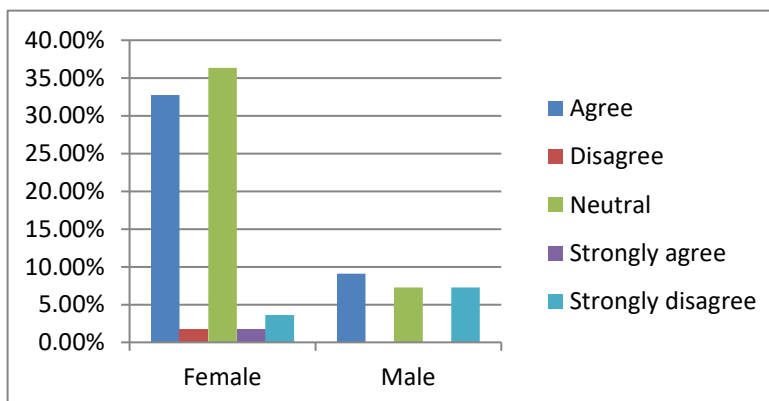
2.Gender	Agree	Disagree	Neutral	Strongly agree	Strongly disagree	Grand Total
Female	32.73%	1.82%	36.36%	1.82%	3.64%	76.36%
Male	9.09%	0.00%	7.27%	0.00%	7.27%	23.64%
Grand Total	41.82%	1.82%	43.64%	1.82%	10.91%	100.00%

Data Analysis:

The study included 55 respondents from different regions of Karnataka. Among them, 76.36% were female and 23.64% were male. Most respondents (78.18%) belonged to the 18–25 years age group, followed by 20.00% in the 26–35 years age group and only 1.82% in the 36–45 years age group. This indicates that the survey mainly represents young female online shoppers.

Interpretation:

The survey mainly represents young respondents (18–25 years), with female participants forming the majority. Therefore, the results mainly reflect the opinions of young female online shoppers.



Visual search features (like uploading a photo to find a product) make it easier to find exactly what I want.

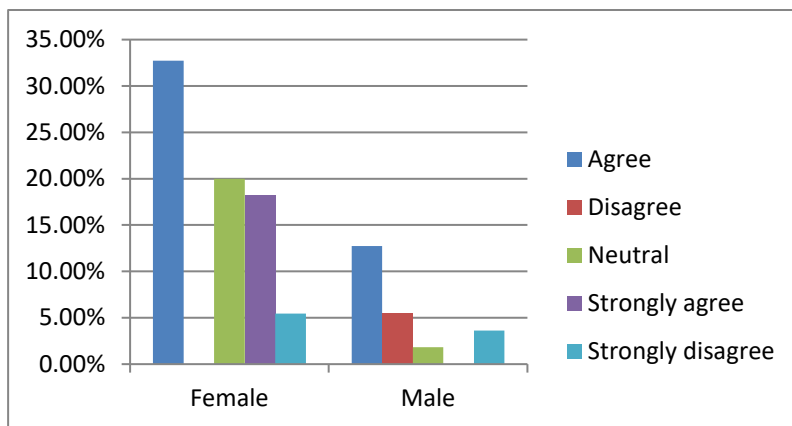
Gender	Agree	Disagree	Neutral	Strongly agree	Strongly disagree	Grand Total
Female	32.73%	0.00%	20.00%	18.18%	5.45%	76.36%
Male	12.73%	5.45%	1.82%	0.00%	3.64%	23.64%
Grand Total	45.45%	5.45%	21.82%	18.18%	9.09%	100.00%

Data Analysis:

The results reveal that 45.45% of respondents Agreed and 18.18% Strongly Agreed that visual search features help them find products easily. In addition, 21.82% gave a Neutral response, while only 5.45% Disagreed and 9.09% Strongly Disagreed. Overall, the majority of respondents had a positive opinion about visual search features.

Interpretation:

Most respondents felt that visual search features are useful and make it easier to find the products they are looking for.



I spend more time and money on e-commerce platforms that offer highly customized content and deals

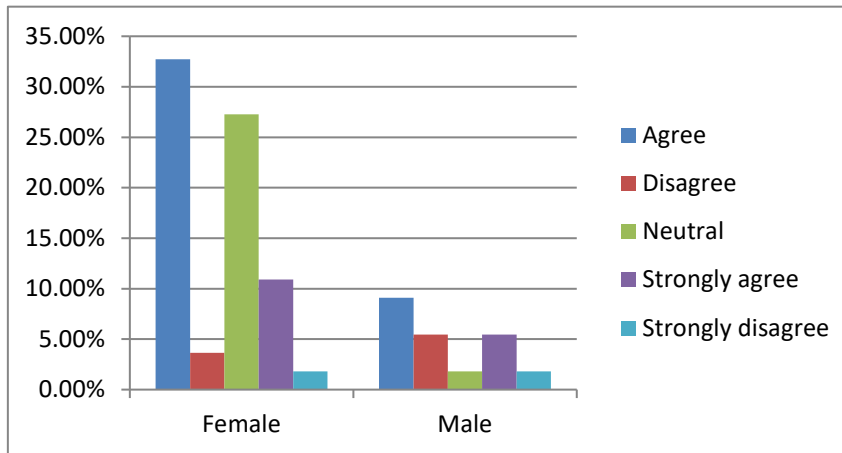
2.Gender	Agree	Disagree	Neutral	Strongly agree	Strongly disagree	Grand Total
Female	32.73%	3.64%	27.27%	10.91%	1.82%	76.36%
Male	9.09%	5.45%	1.82%	5.45%	1.82%	23.64%
Grand Total	41.82%	9.09%	29.09%	16.36%	3.64%	100.00%

Data Analysis:

The data shows that 41.82% of respondents Agreed and 16.36% Strongly Agreed that they spend more time and money on e-commerce platforms offering customized content and deals. Meanwhile, 29.09% remained Neutral, 9.09% Disagreed, and 3.64% Strongly Disagreed. These findings indicate that personalized content and offers positively influence customers' spending behaviour.

Interpretation:

The majority of respondents believe that personalized content and offers encourage them to spend more time and money on e-commerce platforms.



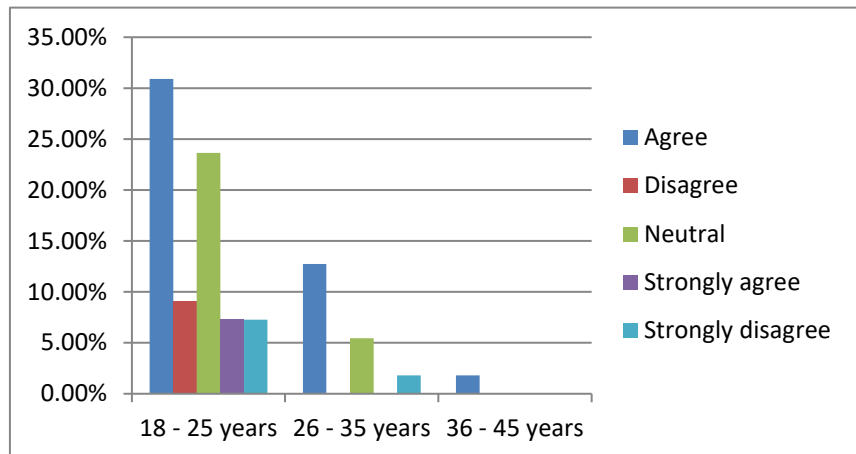
I often end up buying items that I hadn't originally planned to purchase because of AI-driven product suggestions.						
1.Age group	Agree	Disagree	Neutral	Strongly agree	Strongly disagree	Grand Total
18 - 25 years	30.91%	9.09%	23.64%	7.27%	7.27%	78.18%
26 - 35 years	12.73%	0.00%	5.45%	0.00%	1.82%	20.00%
36 - 45 years	1.82%	0.00%	0.00%	0.00%	0.00%	1.82%
Grand Total	45.45%	9.09%	29.09%	7.27%	9.09%	100.00%

Data Analysis:

The analysis indicates that 45.45% of respondents Agreed that AI-driven product suggestions lead them to make unplanned purchases. Further, 29.09% gave a Neutral response, while 7.27% Strongly Agreed. In contrast, 9.09% Disagreed and 9.09% Strongly Disagreed. This shows that AI-based recommendations influence the purchase decisions of many respondents.

Interpretation:

The findings show that AI-driven product suggestions influence many customers to make unplanned purchases, although some respondents remain neutral or disagree.



SPSS TEST

HYPOTHESIS TEST

Hypothesis Test Summary				
	Null Hypothesis	Test	Sig.	Decision
11	The categories of 11.I often end up buying items that I hadn't originally planned to purchase because of AI-driven product suggestions. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
12	The categories of 12.Personalized shopping experiences make me more loyal to a specific e-commerce platform over its competitors. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
13	The categories of 13.AI features (like virtual try-ons or predictive sizing) increase my confidence when making an online purchase decision. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
14	The categories of 14.I spend more time and money on e-commerce platforms that offer highly customized content and deals occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
15	The categories of 15.My overall shopping satisfaction has improved because AI makes the browsing-to-checkout journey faster and simpler. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

DESCRIPTIVE STATISTICS

	N	Missing	Mean	Std. Deviation	Minimum	Maximum	25th
							Percentile
Q8. Visual search features make it easier to find products.	53	0	3.58	1.151	1	5	3.00
Q11. AI-driven product suggestions.	53	0	3.30	1.067	1	5	3.00

DESCRIPTIVE STATISTICS

	N	50th (Median)	75th Percentile
Q6. Recommended products reflect my tastes.	53	3.00	4.00
Q14. I spend more on customized platforms.	53	4.00	4.00

Chi-Square Test

Frequencies

9.Dynamic pricing algorithms (frequent price drops or personalized discounts) make me feel like I am getting a tailored deal			
	Observed N	Expected N	Residual
1	3	10.6	-7.6
2	1	10.6	-9.6
3	19	10.6	8.4
4	24	10.6	13.4
5	6	10.6	-4.6
Total	53		

11.I often end up buying items that I hadn't originally planned to purchase because of AI-driven product suggestions.			
	Observed N	Expected N	Residual
1	5	10.6	-5.6
2	5	10.6	-5.6
3	16	10.6	5.4
4	23	10.6	12.4
5	4	10.6	-6.6
Total	53		

TEST STATISTICS

Question	Chi-Square	df	Asymp. Sig.
Q9. Dynamic pricing algorithms make me feel I am getting a tailored deal.	39.736	4	.000
Q11. I often buy unplanned items because of AI-driven product suggestions.	27.263	4	.000

- a. 0 cells (0.0%) have expected frequencies less than 5. Minimum expected cell frequency is 10.6.

FINDINGS

- Most respondents agreed that AI features such as personalized recommendations and visual search make online shopping easier and more convenient.
- AI-based recommendations and customized offers influence consumers to buy more products and spend more time on e-commerce platforms.
- The study found that Artificial Intelligence has a significant positive impact on consumer buying behaviour in e-commerce platforms in Karnataka.

SUGGESTIONS

- E-commerce platforms should improve the accuracy and transparency of AI-based recommendations to enhance customer trust and satisfaction.
- Companies should strengthen data privacy and security measures to protect customer information while using AI technologies.
- Businesses should develop AI features in regional languages and make them more user-friendly to improve accessibility for consumers across Karnataka.

CONCLUSION

The study concludes that Artificial Intelligence has a significant positive impact on consumer buying behaviour in e-commerce platforms in Karnataka. AI features such as personalized recommendations, visual search, dynamic pricing, and customized offers improve shopping convenience, increase customer engagement, and positively influence purchase decisions. The statistical analysis supports the alternative hypothesis, confirming that AI significantly affects consumer buying behaviour. As AI continues to evolve, e-commerce businesses should focus on ethical implementation, transparency, and data privacy to strengthen customer trust and ensure sustainable growth.

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