



DECODING DESIRE: HOW AI POWERS SMART PREDICTIONS IN CONSUMER BEHAVIOUR

¹Mr. Abishek D M and ²Dr. Nirmala J

¹Principal & Research Scholar, ²Assistant Professor

^{1,2} Department of Business Administration

¹Sri Vidyaniketan Degree College,

^{1,2}Vijayanagara Sri Krishnadevaraya University, Ballari, India

Email: abidmscholar@gmail.com, nirmalaj@vskub.ac.in.

Abstract:

The growing integration of Artificial Intelligence (AI) in consumer-facing platforms has significantly transformed the way businesses understand and influence buying behaviour. This study investigates the role, effectiveness, and challenges of AI-powered predictive models in enhancing marketing strategies and customer engagement, with a focus on Karnataka. Using both quantitative and qualitative methods, data were collected from 150 consumers and 50 business professionals across key cities. The findings reveal a high level of consumer awareness and acceptance of AI-driven recommendations, especially among younger age groups. AI tools such as machine learning, predictive analytics, and recommendation engines are widely used by businesses to improve targeting, personalisation, and campaign performance. However, challenges like data quality issues, high implementation costs, privacy concerns, and a lack of skilled professionals continue to hinder widespread adoption. Statistical tests confirmed a significant association between demographic variables and AI awareness, while correlation analysis indicated a positive relationship between online shopping frequency and perception of AI helpfulness.

Keywords: Artificial Intelligence, Consumer Behaviour, Predictive Analytics, and Marketing Automation.

1. INTRODUCTION:

In today's digital economy, understanding consumer behaviour is vital for effective marketing. Artificial Intelligence (AI) has revolutionised this process through predictive analytics, enabling businesses to forecast what, when, and why consumers buy. AI-driven "smart predictions" use machine learning and other technologies to personalise offers, optimise inventory, and enhance customer satisfaction. Unlike traditional methods limited by bias and small samples, AI can process vast, complex data in real-time—such as browsing history, purchase records, and social media activity—to uncover patterns and predict behaviour. Platforms like Amazon, Flipkart, Netflix, and Spotify leverage AI to recommend products and content, boosting engagement and customer loyalty. AI-driven consumer behaviour prediction extends beyond online platforms to sectors like retail, banking, insurance, healthcare, and education. In retail, AI forecasts demand to optimise shelf placement and promotions; in banking, it predicts customer churn and suggests suitable financial products; in healthcare, it recommends preventive care based on patient history. However, these advancements come with concerns over data privacy, ethical use, algorithmic bias, and transparency. While AI provides powerful predictive capabilities, combining it with human judgment and ethical practices is essential to maintain consumer trust and ensure responsible use.

2. OBJECTIVES OF THE STUDY:

1. To examine the role of AI in analysing and predicting consumer buying behaviour across different industries.
2. To assess the effectiveness and challenges of using AI-powered predictive models in enhancing marketing strategies and customer engagement.

3. RESEARCH METHODOLOGY:

The present study aims to explore the role and effectiveness of AI in predicting consumer buying behaviour. The study is conducted with a focus on businesses and consumers located in the Indian state of Karnataka. The methodology adopted is a combination of both quantitative and qualitative research approaches.

1.1. Research Design

The study follows a descriptive and exploratory research design. The explanatory part aims to document the current use of AI in predicting consumer behaviour, while the exploratory part investigates new trends, challenges, and consumer perceptions about AI-driven systems.

1.2. Area of the Study

The research is conducted in Karnataka, focusing on major urban centers such as Bengaluru, Mysuru, Mangaluru, Hubballi-Dharwad, and Belagavi, where AI-driven business practices are more prevalent, especially in retail, e-commerce, fintech, and marketing sectors.

1.3. Sampling Design

The sampling design for the study focuses on two distinct groups: consumers and business professionals. The population includes consumers who frequently engage with online or AI-driven purchasing platforms, as well as business professionals and marketing executives involved in the application or implementation of AI tools for understanding customer behaviour. A purposive sampling technique has been adopted to ensure that the respondents possess relevant knowledge and experience in using or managing AI-based platforms. This includes users of prominent platforms such as Amazon, Flipkart, Myntra, and Swiggy, along with representatives from companies that employ AI for customer data analytics and insights. The sample size consists of a total of 200 respondents. Among them, 150 are consumers selected from across Karnataka, with approximately 30 respondents chosen from each major city to ensure regional representation. The remaining 50 respondents are business professionals, including marketing managers, data analysts, and AI experts who are directly involved in the use or deployment of AI technologies in business decision-making. This structured and targeted sampling ensures the collection of relevant and perceptive data for the study.

1.4. Data Collection Methods

The study uses both primary and secondary data to explore AI-driven consumer behaviour. Primary data is collected through structured questionnaires (via Google Forms and in-person) targeting consumer experiences, and semi-structured interviews with business professionals to understand real-world AI applications. Secondary data comes from academic journals, case studies, company reports, whitepapers, and government or industry publications, offering broader context and supporting the primary insights, especially within Karnataka's digital consumption landscape.

1.5. Tools for Data Analysis

To analyse the collected data effectively, a combination of quantitative and qualitative analytical tools has been employed. Descriptive statistics, including measures such as mean, percentage, and frequency analysis, are used to interpret the responses obtained from consumers, providing a clear understanding of general trends and behaviour patterns. Inferential statistics, such as chi-square tests and correlation analysis, are applied to explore the relationships between demographic variables (like age, gender, and location) and perceptions or usage of AI-driven platforms.

1.6. Period of the Study

The period of the study spans three months, starting from April 2025 and concluding in June 2025. During this time, data collection, analysis, and interpretation were systematically carried out to ensure accuracy, depth, and relevance of the findings.

4. DATA ANALYSIS AND INTERPRETATION:

Table 1: Consumer Awareness and Use of AI in Purchase Platforms

Particulars	Frequency	Percentage (%)
Aware of AI-based recommendations	120	80.0%
Not aware of AI-based systems	30	20.0%
Frequently receive product suggestions	105	70.0%
Rarely receive product suggestions	45	30.0%
Believe AI improves the shopping experience	110	73.3%
Do not believe AI improves experience	40	26.7%

Source: Compiled by the author with primary data

Table 1 indicates a high level of consumer awareness and interaction with AI-driven purchase platforms. A significant majority of respondents (80%) are aware of AI-based product recommendations, suggesting that AI technologies have become a familiar and integrated part of the shopping experience for most consumers. Furthermore, 70% of consumers reported that they frequently receive product suggestions, which implies that AI systems are actively engaging users with personalised content during their purchase journeys. When it comes to perceived value, 73.3% of consumers believe that AI enhances their overall shopping experience, indicating strong acceptance and appreciation for AI-enabled personalisation. On the contrary, only 26.7% of respondents felt that AI does not improve their experience, showing that the negative perception is relatively low.

Table 2: Industries Identified by Consumers as Using AI in Predictive Buying

Industry	No. of Mentions (Multiple Responses)	Percentage (%)
E-commerce (Amazon, Flipkart, etc.)	135	90.0%
Food Delivery (Swiggy, Zomato)	105	70.0%
Fintech / Online Banking	88	58.7%
Retail Stores (Vishal Mart, Reliance)	60	40.0%
OTT/Streaming Platforms	72	48.0%
Healthcare (Apps, Consultations)	33	22.0%

Source: Compiled by the author with primary data

Table 2 reveals consumer perceptions of various industries utilising AI for predictive buying. E-commerce platforms such as Amazon and Flipkart are recognised by an overwhelming 90% of respondents as the most active users of AI, indicating that these platforms have effectively implemented AI features like recommendation engines and personalised marketing. Food delivery services like Swiggy and Zomato follow closely, with 70% of respondents acknowledging their use of AI, likely due to features like dynamic pricing, location-based suggestions, and past order-based recommendations. AI adoption is increasingly recognised across sectors. About 58.7% of consumers identify its use in fintech and online banking for fraud detection, transaction analysis, and personalised offers. Retail stores are noted by 40% for AI-driven loyalty programs and promotions, while 48% cite OTT platforms like Netflix and YouTube for content recommendations. Though lower, 22% acknowledge AI in healthcare through apps, symptom checkers, and online consultations, indicating a growing trend in the sector.

Table 3: Business Professionals on AI Tools Used

AI Tool/Technology	Users (n)	% of Professionals
Machine Learning Algorithms	38	76.0%
Predictive Analytics Software	35	70.0%
Customer Data Platforms (CDP)	27	54.0%
Chatbots with AI	29	58.0%
Recommendation Engines	32	64.0%

Source: Compiled by the author with primary data

Table 3 highlights the types of AI tools and technologies commonly adopted by business professionals in Karnataka to analyse and influence consumer behaviour. The most widely used technology is Machine Learning Algorithms, with 76% of professionals reporting its usage. This reflects the growing reliance on machine learning for recognising complex patterns, predicting customer preferences, and automating decision-making. Close behind is Predictive Analytics Software, used by 70% of respondents, indicating that businesses are leveraging historical and real-time data to forecast customer actions and market trends. AI tools are widely adopted by businesses to enhance marketing and customer experience. Recommendation engines are used by 64% to personalise interactions and boost conversions, while 58% use AI chatbots for automated customer service. Customer Data Platforms (CDPs), adopted by 54%, enable targeted marketing through unified customer profiles. These findings show a trend toward integrating multiple AI tools to support data-driven decision-making and engagement.

Table 4: Purpose of AI Implementation as Reported by Businesses

Purpose	Frequency	Percentage (%)
Personalised product suggestions	42	84.0%
Customer segmentation	38	76.0%
Purchase pattern analysis	34	68.0%
Inventory and demand forecasting	30	60.0%
Customer service automation	36	72.0%

Source: Compiled by the author with primary data

Table 4 highlights the main AI applications among businesses in Karnataka. Personalised product suggestions lead at 84%, showing a strong focus on enhancing customer experience. Customer segmentation (76%) and purchase pattern analysis (68%) are widely used to tailor marketing and predict buying behaviour. AI-driven customer service automation is adopted by 72% through chatbots and virtual assistants, while 60% use AI for inventory and demand forecasting to optimise operations and meet consumer needs efficiently.

Table 5: Consumer Perception of AI Effectiveness in Marketing

Statement	Agree	Neutral	Disagree
AI helps in finding relevant products/offers faster	120 (80%)	20 (13.3%)	10 (6.7%)
AI-generated ads match my interests	105 (70%)	30 (20.0%)	15 (10.0%)
AI-driven product suggestions influence my buying decision	108 (72%)	25 (16.7%)	17 (11.3%)
Personalised emails/messages are helpful	112 (74.7%)	20 (13.3%)	18 (12.0%)
AI-based marketing feels intrusive or annoying	42 (28%)	18 (12.0%)	90 (60.0%)

A significant majority of respondents (80%) agree that AI helps in finding relevant products or offers faster, indicating that AI-driven personalisation is successfully enhancing the shopping experience. Similarly, 70% of consumers feel that AI-generated advertisements match their interests, which suggests that targeted advertising through AI is resonating well with user preferences. Additionally, 72% of consumers agree that AI-driven product suggestions influence their buying decisions, highlighting AI's strong role in shaping consumer choices and encouraging purchases. Personalised emails and messages are also perceived positively by 74.7% of respondents, reflecting a high level of appreciation for customised communication. Interestingly, while most feedback about AI marketing is positive, 28% of consumers feel that AI-based marketing is intrusive or annoying, whereas 60% disagree with this view. This suggests that although there are some concerns regarding privacy or over-personalisation, many consumers do not find AI marketing bothersome.

Table 6: Business Professionals' Opinion on AI's Impact on Marketing

Aspect	Strongly Agree	Agree	Neutral	Disagree
AI enhances customer targeting	30 (60%)	15 (30%)	5 (10%)	0 (0%)
AI improves customer retention	22 (44%)	20 (40%)	8 (16%)	0 (0%)
Predictive analytics improves ROI	28 (56%)	18 (36%)	4 (8%)	0 (0%)
AI helps in a dynamic pricing strategy	20 (40%)	17 (34%)	10 (20%)	3 (6%)
AI reduces manual effort in campaigns	35 (70%)	10 (20%)	5 (10%)	0 (0%)

Source: Compiled by the author with primary data

A strong consensus emerges around the role of AI in enhancing customer targeting, with 60% strongly agreeing and 30% agreeing, making it clear that AI is seen as a highly effective tool for identifying and reaching the right audience. Similarly, 84% of respondents (44% strongly agree, 40% agree) believe that AI significantly contributes to customer retention, indicating its usefulness in sustaining long-term customer relationships through personalised engagement. In terms of financial benefits, 92% (56% strongly agree, 36% agree) of professionals affirm that predictive analytics improves return on investment (ROI), underlining the measurable value that AI brings to marketing performance. Regarding dynamic pricing strategies, 74% of professionals support the idea that AI helps in optimising prices based on demand and market conditions, although 20% remain neutral and 6% disagree, possibly due to industry-specific constraints or implementation challenges. Notably, 90% (70% strongly agree, 20% agree) of respondents agree that AI reduces manual effort in marketing campaigns, emphasising the operational efficiency and time-saving benefits that AI automation provides.

Table 7: Important Challenges Reported by Businesses in Implementing AI Models

Challenge	No. of Responses	% of Respondents
Lack of quality data	31	62.0%
High cost of AI implementation	28	56.0%
Data privacy and ethical concerns	26	52.0%
Difficulty in model accuracy	21	42.0%
Lack of skilled professionals	25	50.0%

Source: Compiled by the author with primary data

The key challenges in AI adoption reported by businesses include lack of quality data (62%), which affects the reliability of AI predictions, and high implementation costs (56%), especially for SMEs. Data privacy and ethical concerns are noted by 52%, reflecting increased caution around responsible data use. A shortage of skilled professionals (50%) highlights the talent gap in managing AI systems, while 42% cite difficulties in achieving model accuracy, impacting decision-making and trust in AI outcomes.

Table 8: Consumer Trust and Willingness to Share Data

Statement	Yes (%)	No (%)	Not Sure (%)
Willing to share data if it improves the shopping experience	102 (68%)	28 (18.7%)	20 (13.3%)
Concerned about how AI systems use personal data	110 (73.3%)	30 (20%)	10 (6.7%)
Trust brands using AI responsibly	95 (63.3%)	35 (23.3%)	20 (13.3%)

Source: Compiled by the author with primary data

A substantial 68% of consumers express willingness to share their data if it leads to an improved shopping experience, indicating that many consumers are open to personalised services when there is clear value in return. However, this openness is accompanied by caution; 73.3% of respondents say they are concerned about how AI systems use their data, which reflects ongoing worries around privacy, misuse of information, and lack of transparency in data handling. When it comes to trusting brands that use AI responsibly, 63.3% of respondents report a positive view, showing that most consumers are willing to place confidence in companies that demonstrate ethical AI practices. However, 23.3% do not trust such brands, and 13.3% remain unsure, indicating that while trust exists, it is not uniform and can be fragile.

Table 9: Chi-square Test – Age vs. Awareness of AI-based Product Recommendations

Age Group	Aware of AI	Not Aware	Total
18–25	50	5	55
26–35	40	10	50
36–50	20	10	30
51+	10	5	15
Total	120	30	150
Chi-square value: 12.74			
Degrees of freedom (df): 3			
p-value: 0.005			

Source: Compiled by the author with primary data

Table 9 shows a significant relationship between age and awareness of AI-based product recommendations (chi-square = 12.74, df = 3, p = 0.005). Younger consumers (18–25 years) display the highest awareness (50 out of 55), while those above 36 show lower familiarity. This suggests the need for age-targeted marketing strategies, with a focus on educating older consumers to bridge the digital gap.

Table 10: Correlation Analysis – Frequency of Online Shopping vs. Perceived Helpfulness of AI

Variable	Correlation Coefficient (r)
Frequency of online shopping	
Helpfulness rating of AI suggestions	+0.61

Source: Compiled by the author with primary data

The correlation coefficient (r) is +0.61, indicating a moderately strong positive correlation between the two variables. This means that as the frequency of online shopping increases, consumers are more likely to perceive AI-based product suggestions as helpful. The positive correlation suggests that experience with AI tools enhances trust and satisfaction, reinforcing the importance of continued innovation in AI personalisation for regular online shoppers. Businesses can use this insight to design strategies that promote more frequent platform engagement, knowing that it directly contributes to consumer acceptance and perceived value of AI-powered shopping experiences.

5. CONCLUSION:

This study examined how AI is being utilised to predict and influence consumer buying behaviour, with a specific focus on Karnataka. The results clearly show that AI has become a key component of modern consumer experiences, especially in industries such as e-commerce, food delivery, fintech, and streaming services. A significant majority of consumers are aware of AI-driven recommendations and perceive them as helpful, relevant, and time-saving. Younger consumers demonstrate higher awareness and engagement with AI platforms, as supported by statistically significant chi-square test results.

From the business perspective, AI tools such as machine learning algorithms, predictive analytics software, recommendation engines, and chatbots are widely used to personalise marketing efforts, enhance customer engagement, and improve return on investment. Businesses acknowledge that AI greatly enhances targeting, retention, and automation, although challenges such as poor data quality, high costs, privacy concerns, and skill shortages still hinder full-scale adoption. Correlation analysis revealed that frequent online shoppers are more likely to find AI suggestions helpful, reinforcing the importance of experience and exposure in shaping consumer trust in AI. While many consumers are willing to share their data for better personalisation, concerns around data privacy and ethical use remain high. This calls for responsible AI implementation and transparent communication from businesses.

REFERENCES:

1. Werner, T., Soraperra, I., Calvano, E., Parkes, D. C., & Rahwan, I. (2024). *Experimental evidence that conversational artificial intelligence can steer consumer behaviour without detection*. arXiv preprint.
2. Vogue Business. (2025, c. Mar). *Generative AI hits a fashion acceleration point*. Vogue Business.
3. Vogue Business. (2025, c. Feb). *What if robots ran the beauty industry?* Vogue Business.
4. Vallarino, D. (2025). *How do consumers really choose: Exposing hidden preferences with the mixture of experts' model*. arXiv preprint.
5. The Guardian. (2024, December 30). *AI tools may soon manipulate people's online decision-making, say researchers—The Guardian*.
6. The Financial Times. (2024). *AI and the R&D revolution*. FT.com.

