



A STUDY OF AI POWERED PREDICTIVE CONSUMER BEHAVIOUR MODELS IN- KDMC

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Abstract:

This study looks at the role and impact of AI-powered predictive consumer behavior models in the kalyan- dombivli municipal corporation KDMC area it explores how businesses use AI technology to analyze consumer data predict buying habits and offer personalized services in a more digital marketplace as e-commerce platforms digital payment systems and data-driven marketing strategies grow rapidly consumer decisions have become more tech-focused this shift creates a need to understand how predictive models are adopted and how effective they are at the regional level the study aims to clarify the concept and functioning of AI-powered predictive consumer behavior models check the awareness and use of AI tools among businesses in the KDMC area evaluate how AI supports marketing and decision-making and identify the challenges and limits of predicting consumer behavior through AI technology this research uses a mixed-method approach it collects primary data from 64 respondents including professionals business owners and consumers in the KDMC area it also looks at secondary data from academic literature and industry sources the findings show that businesses increasingly use AI tools for product research recommendations and purchase support especially among younger consumers and working professionals however while AI improves customer engagement and marketing success concerns about data privacy transparency and trust in algorithms significantly affect how consumers accept AI systems the research further shows that AI-powered predictive models improve business competitiveness and help in making informed decisions yet challenges like limited knowledge of technology infrastructure issues and ethical concerns prevent full implementation the study concludes that successfully adopting AI-powered predictive consumer behavior models in KDMC requires better transparency responsible data practices and stronger consumer trust it also calls for strategic adjustments to fit local market needs this topic is important because artificial intelligence is quickly changing consumer behavior and business practices in the digital economy however little research has looked at its effects at the municipal level especially in emerging urban markets like KDMC this study was chosen to provide a unique perspective by focusing on a local market rather than broader national or global trends by examining region-specific consumer behavior patterns levels of technology adoption and implementation challenges the research offers new insights that set it apart from existing studies enhancing its relevance and originality

Keywords : Artificial Intelligence (AI), Predictive Consumer Behaviour, Machine Learning (ML), KDMC (Kalyan–Dombivli Municipal Corporation), Digital Marketing Analytics, E-Commerce Adoption, ocal Market Digital Transformation, Consumer Trust & Transparency & AI-Driven Personalization.

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Introduction: The retail and commercial landscape is undergoing a rapid, technology-driven transformation, shifting from traditional, reactive marketing to proactive, data-driven, and predictive strategies.

At the heart of this revolution is Artificial Intelligence (AI) and Machine Learning (ML), which empower businesses to analyze massive, multi-source datasets—such as transnational records, social media interactions, and browsing patterns—to uncover hidden patterns in consumer purchasing habits. Predictive consumer behavior modeling uses these AI insights to forecast future actions, allowing companies to anticipate needs, personalize customer experiences, and boost retention by identifying risks like customer churn. In the rapidly urbanizing environment of the Kalyan-Dombivli Municipal Corporation (KDMC), the rise of e-commerce, digital payments, and organized retail has created a complex market. Consumers in this region are increasingly digitally savvy, demanding seamless, personalized experiences across online and offline platforms. As a "Peripheral Central Suburb" of Mumbai, KDMC represents a unique, fast-growing micro-market with specific socioeconomic dynamics that require tailored, local insights rather than generic national strategies. This study aims to examine the adoption and impact of AI-powered predictive consumer behavior models within the KDMC region. It investigates how local retailers and service providers leverage these technologies to enhance customer engagement, improve competitiveness, and overcome challenges related to data privacy and implementation. By analyzing the application of these predictive models, this research aims to provide actionable insights for adapting to the evolving preferences of the KDMC consumer base.

Recent Evolution and Adoption Trends:

- **Rapid Adoption in KDMC:** The KDMC (Kalyan- Dombivli Municipal Corporation) region has shown strong rates of AI adoption among surveyed urban clusters; by 2025–2026, 41% of consumers were using AI shopping tools, with another 40% planning to adopt them.
- **Surge in AI-Driven Traffic:** Retailers observed a massive spike in generative AI-powered shopping traffic, which increased by 1,300% year-over-year during the 2024 holiday season and surged by 4,700% by July 2025.
- **Research over Conversion:** Historically, consumers have used AI primarily for the research and consideration phases of a purchase. Common tasks include conducting product research (53%), receiving recommendations (40%), and seeking deals (36%).
- **Higher Engagement:** Shoppers arriving from generative AI sources are typically 10% more engaged than those from non-AI sources, spending 32% more time on retail sites and exploring more pages.

Consumer Attitudes and Trust:

The history of consumer behavior also highlights a complex relationship with trust and transparency:

Explain ability as a Prerequisite for Trust: Approximately 80% of consumers in the KDMC region report they trust a digital assistant more if it can explain the reasons behind its recommendations. This is linked to "Explainable AI" (XAI) techniques, which aim to make "black box" algorithms interpret-able to the average user.

- **The Desire for Boundaries:** A majority of shoppers (76% globally and 79% in the KDMC region) want the ability to set strict boundaries for AI assistants, such as spending limits and restricted product categories.

- **Data Privacy Concerns:** Privacy remains a significant barrier, with 72% of consumers in the KDMC region citing a lack of clarity regarding how AI collects and uses personal data like browsing history. Furthermore, 74% believe brands should explicitly inform users when they are viewing AI-generated advertisements.

Value Perception and Economic Behavior:

- **Unwillingness to Pay:** Despite the perceived benefits, most consumers are not willing to pay for AI shopping tools. Only 19% of global shoppers are willing to pay a subscription, while 23% of respondents in the KDMC region refuse to pay entirely and another 23% will only pay if the services are bundled with rewards.
- **Focus on Fairness:** By 2026, consumer priorities shifted toward "fairness" as a foundational value. This change stems from diminishing purchasing power and financial uncertainty, making consumers more deliberate about where they spend and how AI influences those choices.
- **Ethical Risks:** History shows that unchecked AI can lead to discriminatory outcomes, such as Amazon's biased hiring tool or racial disparities in AI-driven credit scoring. These real-world cases have made consumers and regulators more vigilant about algorithmic bias and the need for ethical AI governance.

Background:

- The background and history of consumer behavior regarding Artificial Intelligence (AI) reflect.
- A transition from the technology being a simple back-end enabler to becoming a "trusted advisor" for modern users.
- While the pioneers of the 1950s envisioned machines that could sense and reason like humans, it was not until the early 2000s.
- That machine learning and neural networks began to flourish in business applications, eventually leading to the contemporary era of deep learning and big data.

Need of the Study:

The rapid growth of Artificial Intelligence (AI) is transforming consumer behaviour and business practices, especially in India. With the rise of digital platforms, e-commerce, and digital payment systems, consumer decisions have become more technology-driven. Businesses use AI-based predictive analytics to analyse customer data, identify buying patterns, and provide personalized services.

These AI-driven marketing strategies influence purchasing behaviour and improve business decision-making. However, most research focuses on national or global trends, with limited studies at the local level. Since consumer behaviour varies across regions, it is important to study the impact of AI-powered predictive consumer behaviour models specifically in the KDMC region to understand how technology shapes local buying decisions.

Objectives:

- To understand the concept and working of AI-powered predictive consumer behavior models.
- To examine the level of awareness and adoption of AI tools among businesses in KDMC.
- To evaluate how businesses use AI for marketing and decision-making.
- To identify challenges and limitations of AI in predicting consumer behavior.

Statement of Problem:

The rapid growth of artificial intelligence (AI) and data-driven digital technologies has significantly transformed how organizations operate and how markets influence consumer behavior. However, in municipal regions such as Kalyan-Dombivli (KDMC), there is limited structured research and development focused on effectively utilizing AI and predictive models. Challenges arise from factors such as data availability, technological infrastructure, demographic diversity, and varying levels of digital literacy. KDMC, in particular, may face difficulties in adopting AI tools and technologies due to several constraints, including high implementation costs, lack of expertise, and concerns over data privacy. These barriers hinder the region's ability to fully leverage AI for market diversification and consumer engagement, making it essential to explore strategies that address these limitations and enable sustainable adoption of digital innovations.

Significance of Study:

The Significance of the study this study on ai-powered predictive consumer behavior models in kdmc holds considerable importance for both academic research and practical application by examining how artificial intelligence can be leveraged to understand and forecast consumer behavior in a diverse municipal region the research contributes to bridging the gap between technological innovation and local market realities academic contribution expands the body of knowledge on ai adoption in semi-urban and municipal contexts provides insights into how demographic diversity digital literacy and infrastructural limitations influence the effectiveness of predictive models offers a framework for future studies on consumer analytics in regions with similar socio-economic characteristics practical relevance helps local businesses and organizations in KDMC.

- Data privacy concerns while suggesting pathways to overcome them supports policymakers in designing initiatives that promote digital literacy and encourage sustainable ai adoption societal
- Transparency contributes to the overall digital transformation of kdmc fostering economic growth and innovation in essence the study

Limitations:

- **Limited Area** – The study is conducted only in KDMC (Kalyan– Dombivli), so the results may not apply to other cities or regions.
- **Limited Sample Size** – The number of businesses or consumers surveyed may be small, so it may not fully represent everyone
- **Time Constraint** – The study is done within a short period, so it may not capture long-term changes in consumer behavior.
- **Data Accuracy** – The research depends on the information given by respondents, which may not always be completely accurate or honest.
- **Technology Awareness** – Some businesses in KDMC may not fully understand AI tools, which can affect the quality of responses.
- **Rapid Technological Changes** – AI technology changes very fast, so findings of the study may become outdated in the future.

- **Cost and Resource Limitation** – Limited budget and resources may restrict detailed data collection and analysis.

Hypothesis:

- Hypothesis 1 — Awareness and Adoption of AI
 - i. H_1 (Alternative Hypothesis):
Businesses operating in KDMC show a measurable level of awareness and use of Artificial Intelligence–based predictive tools for understanding consumer behaviour.
 - ii. H_{01} (Null Hypothesis):
Businesses operating in KDMC do not show a measurable level of awareness or use of Artificial Intelligence–based predictive tools for understanding consumer behaviour.

Review of Literature:

- **Reddy, C. N., Razzaque, A., Arulini, K., Gayathri, B., & Begum, M. B. (2025, July).** AI-Driven Analysis of Consumer Behavior using IoT Systems. In 2025 6th International Conference on Data Intelligence and Cognitive Informatics (ICDICI) (pp. 1463-1469). IEEE.
- **Choudhary, S. (2025). Predictive Analytics in Marketing: Exploring How AI Can Predict Future Customer Behaviour and Trends:**Marketing Strategies in the Era of Technological Innovations: Thesis examines how AI produces a surge in the correctness and efficiency of marketing strategies by forecasting...
- **Subhashree, M. S., & Sumetha, M. AI-POWERED MARKET RESEARCH: ENHANCING CONSUMER INSIGHTS THROUGH PREDICTIVE ANALYTICS. SPCAMIC-2024, 53.***AI-Powered Market Research: Enhancing Consumer Insights Through Predictive Analytics" by Subhashree and Sumetha explores utilizing artificial intelligence and predictive analytics to forecast consumer behavior and enhance marketing strategies. The research emphasizes transitioning from traditional methods to real-time, data-driven insights for improved personalization and decision-making. Further insights can be found in the related study at Orion Journals.*
- **Mrs S Subhashree, M Sumetha SPCAMIC-2024, 53** This research paper explores the integration of **Artificial Intelligence (AI)** into market research, with a particular focus on the role of predictive analytics in generating deeper and more accurate consumer insights. By reviewing the literature using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework, we highlight how AI-powered tools have transformed market research, providing real-time, data-driven insights that surpass the capabilities of traditional method
- **Ramya, J., Swapna, S., Varalakshmi, C., et al. (2025). AI-Powered Marketing: Predictive Consumer Behavior and Personalized Campaigns. Journal of Marketing & Social Research, 2(2), 28-38.**
This review explores how predictive consumer behaviour models fuel hyper-personalised marketing through machine learning, sentiment tracking, and historical behaviour data analysis

Research Methodology:

This study examines the role of Artificial Intelligence (AI) in predicting consumer behavior in the Kalyan-Dombivli (KDMC) market. A mixed-method research approach was adopted to gain a comprehensive understanding of the application of AI in the Kalyan- Dombivli region. Primary data was collected from 64 respondents, including working professionals, business owners, and entrepreneurs residing in the Kalyan-Dombivli area. Both quantitative and qualitative data collection methods were used. Quantitative data was gathered using a structured questionnaire based on a Likert scale pattern, while qualitative insights were obtained through open-ended questions. Secondary data was collected from research papers, academic journals, and other published sources to support and strengthen the findings of the study.

Sampling of Technique :

Descriptions	Details of data
Research Type	Descriptive study
Research method	Mixed method 1. Qualitative 2. Quantitative
Sampling method	Non-Probability Convenient Sampling
Population of study	Working professionals, Owners, Business & Others
Sample size of data collected	64 Respondents
A data collection tools	A Structured Questionnaire Form
Targeted Respondent	Working professionals and Consumers
Data type	Primary and Secondary
Statistical Tools	Correlation

Data Collection:

Table 01: Demographical Attribute

Gender	No.of Total Count	% of Total data
Male	32	50%
Female	32	50%
Age Group (Range)		
Below 25	32	50%
25-35	17	26.5%
36-45	13	20.31%
46-55	2	3.13%
Above 55	0	0.00%
Employment Type		
Employee	34	53.13%
Business	6	9.38%
Consumers	4	6.25%
Owners	3	4.69%
Others	17	26.56%

Respondent Type		
Others	30	44.78%
Service	22	32.84%
E-Commerce	10	14.93%
Retail	3	4.48%
Manufacturer	2	2.99%

Interpretation of the data:

- The sample shows **perfect gender balance**, with equal representation of males and females. This indicates that the data-set is free from gender bias and provides balanced insights from both groups.
- This indicates that the data is **highly youth-oriented**, with the majority belonging to younger and early middle-aged groups. Therefore, the findings are likely to reflect the perceptions and behaviors of younger generations.
- This indicates that the study largely reflects the perspective of **working professionals**, with limited entrepreneurial representation.
- This suggests that the data set is primarily influenced by respondents from **service-related and miscellaneous sectors**, with limited input from traditional retail and manufacturing industries.

Challenges of Study:

- Data Quality & Availability
- Ethical & Privacy Concerns
- Action ability of Predictions
- AI's Role & Limitations

Summary Table

Challenges	KDMC Context	Implication
Data Quality	Fragmented, limited digital records	Weak model accuracy
Privacy & Ethics	Regulatory compliance, consumer mistrust	Risk of non-adoption
Actionability	Predictions not easily translated	Limited marketing utility
AI Role	Strong in data analysis, weak in local adaptation	Potential bias, reduced relevance

Findings:

- **Who is using AI:** The KDMC region is surprisingly tech-savvy. About **41% of people** are already using AI tools for shopping, and many more plan to start soon.
- **What they use it for:** People aren't just clicking "buy" immediately. Most use AI to **do their homework**—searching for products (53%), looking for the best deals, and getting recommendations.
- **The Trust Gap:** This is a big one. Even though people like the convenience, they are nervous. **80% of people** in our area say they will only trust an AI assistant if it can explain *why* it is suggesting a certain product.
- **Privacy Matters:** Over **70% of respondents** are worried about their personal data and browsing history.

They want to set boundaries, like spending limits, so the AI doesn't take over too much.

- **Local Demographics:** My study showed that the interest in AI is driven mostly by the **younger generation (under 25)** and **working professionals**. Interestingly, men and women in KDMC are equally interested in using these technologies.

Conclusion:

To wrap things up, my study shows that AI is no longer just a "future" concept for KDMC—it is happening right now. Local shoppers are moving away from traditional habits and toward a world where AI acts like a digital shopping assistant.

However, for businesses in Kalyan- Dombivli to really succeed with AI, they can't just use a "one-size-fits-all" strategy. They need to focus on **building trust**. Because people in our region are worried about privacy and "black box" algorithms, businesses must be more transparent about how they use data.

AI is a powerful tool for boosting engagement and sales, but in a unique market like KDMC, **fairness and honesty** are just as important as the technology itself. If

retailers can show consumers that AI is safe and helpful (and keep it affordable), the region is poised for a major digital retail explosion.

Bibliography:

1. Choudhary, S. (2025). *Predictive analytics in marketing: Exploring how AI can predict future customer behaviour and trends. Marketing Strategies in the Era of Technological Innovations.*
2. Ramya, J., Swapna, S., Varalakshmi, C., et al. (2025). *AI-powered marketing: Predictive consumer behavior and personalized campaigns. Journal of Marketing & Social Research, 2(2), 28–38.*
3. Reddy, C. N., Razzaque, A., Arulini, K., Gayathri, B., & Begum, M. B. (2025). *AI-driven analysis of consumer behavior using IoT systems. In Proceedings of the 6th International Conference on Data Intelligence and Cognitive Informatics (ICDICI 2025) (pp. 1463–1469). IEEE.*
4. Subhashree, M. S., & Sumetha, M. (2024). *AI-powered market research: Enhancing consumer insights through predictive analytics. SPCAMIC-2024 Conference Proceedings, 53.*
5. Subhashree, M. S., & Sumetha, M. (2024). *Integration of artificial intelligence in market research: A PRISMA-based review. Orion Journals.*

References:

1. OpenAI. (2026). *ChatGPT (February 2026 version) [Large language model].* <https://chat.openai.com>
2. ResearchGate. (2026). *Research papers on artificial intelligence and consumer behavior.* <https://www.researchgate.net>
3. Google Scholar. (2026). *Scholarly articles on AI-powered predictive consumer behaviour models.* <https://scholar.google.com>
4. PwC. (2025). *Artificial intelligence in consumer markets: Opportunities and challenges.* <https://www.pwc.com>
5. Statista. (2026). *Artificial intelligence (AI) in retail – Statistics & facts.* <https://www.statista.com>

6. McKinsey & Company. (2025). *The state of AI in 2025: Retail and consumer insights*.
<https://www.mckinsey.com>
7. Online Research Sources:
8. Deloitte. (2025). *State of AI in the enterprise: Retail and consumer products report*.
<https://www2.deloitte.com>
9. Forbes. (2025). *How artificial intelligence is transforming consumer behavior and retail marketing*.
<https://www.forbes.com>
10. Gartner. (2025). *Top trends in artificial intelligence for retail and digital commerce*.
<https://www.gartner.com>
11. IBM. (2025). *What is predictive analytics?*
12. <https://www.ibm.com/topics/predictive-analytics>

Appendix: Questionnaire:

01. Demographical Q&A

➤ Age Group

- A. Below 25
- B. 25-35
- C. 36-45
- D. 46-55
- E. Above 55

➤ Gender

- A. Male
- B. Female
- C. Prefer not to say

➤ Respondent Type

- A. Business
- B. Owner
- C. Employee
- D. Consumer
- E. Other

➤ Business Type (if applicable)

- A. Retail
- B. E-Commerce
- C. Service
- D. Manufacturer
- E. Other

➤ *Are you aware of AI applications in predicting consumer behavior?*

- A. Yes
- B. No
- C. Maybe

➤ *AI helps in understanding customer needs and preferences.*

- A. Strongly Disagree
- B. Disagree
- C. Neutral
- D. Agree
- E. Strongly Agree

➤ *Does your organization use AI tools?*

- A. Yes
- B. No
- C. May be
- D. Planning to adopt

➤ *Purpose of AI use*

- A. Customer Analysis
- B. Sales Forecasting
- C. Marketing
- D. Customer Service
- E. Not Applicable

➤ *AI improves marketing effectiveness*

- A. Strongly Disagree
- B. Disagree
- C. Neutral
- D. Agree
- E. Strongly Agree

➤ *AI contributes to better business decision-making*

- A. Strongly disagree
- B. Disagree
- C. Neutral
- D. Agree
- E. Strongly agree



- **Major challenge in AI implementation**
 - A. High Cost
 - B. Lack of Expertise
 - C. Data Privacy
 - D. Lack of awareness
 - E. None
- **Do you trust AI predictions regarding consumer behavior?**
 - A. Fully
 - B. Somewhat
 - C. Neutral
 - D. Do not trust
- **AI increases business performance (sales/efficiency)**
 - A. Strongly disagree
 - B. Disagree
 - C. Neutral
 - D. Agree
 - E. Strongly agree
- **Main limitation of AI in business**
 - A. Financial Constraints
 - B. Skilled workforce
 - C. Technology issues
 - D. Resistance to Change
- **AI will play a major role in future business decision-making**
 - A. Strongly disagree
 - B. Disagree
 - C. Neutral
 - D. Agree
 - E. Strongly Agree

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