

ARTIFICIAL INTELLIGENCE ADOPTION IN AUTOMOBILE RETAILING AND ITS EFFECT ON CONSUMER PURCHASE BEHAVIOUR: A REGIONAL STUDY OF UTTAR PRADESH

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Abstract

Artificial Intelligence (AI) has emerged as a transformative technology in automobile retailing by improving customer engagement, personalization, and decision-making processes. The present study examines the impact of AI adoption on consumer purchase behaviour in automobile retailing with special reference to Uttar Pradesh. The study is based on primary data collected from 90 respondents across nine major cities of Uttar Pradesh, including Lucknow, Noida, Ghaziabad, Kanpur, Varanasi, and Agra. Statistical tools such as descriptive statistics, correlation analysis, regression analysis, ANOVA, and SPSS were used for data analysis. The findings reveal that nearly 78% of respondents preferred AI-based personalized recommendation systems, while 74% positively responded toward virtual showroom technologies. The study further identified a strong positive relationship between AI adoption and consumer purchase behaviour with a correlation coefficient of 0.804. Customer satisfaction and consumer trust were also found to significantly influence purchase intention and final buying decisions. The study concludes that AI-enabled automobile retailing significantly enhances customer experience and purchasing efficiency.

Keywords: Artificial Intelligence, Automobile Retailing, Consumer Purchase Behaviour, Customer Satisfaction, Uttar Pradesh

1. Introduction

Artificial Intelligence (AI) has emerged as one of the most transformative technologies influencing modern business operations, consumer interactions, and retail marketing strategies across the world. The rapid advancement of digital technologies, machine learning algorithms, predictive analytics, natural language processing, and intelligent automation systems has significantly altered the operational structure of the automobile retail industry. Automobile dealerships are increasingly adopting AI-enabled technologies to improve customer engagement, personalize marketing communication, optimize inventory management, and enhance purchasing experiences. The integration of AI into automobile retailing has created a digitally connected ecosystem where consumers can access virtual showrooms, AI-powered recommendation systems, online financing assistance, predictive maintenance information, and chatbot-based customer support services before making purchasing decisions [1].

The global automobile industry is undergoing substantial digital transformation due to changing consumer expectations, technological innovation, and increasing competition among automobile manufacturers and dealerships. According to recent industry estimates, the global Artificial Intelligence market in the automotive sector was valued at approximately USD 7.8 billion in 2024 and is expected to exceed USD 35 billion by 2030 due to increasing investments in smart mobility, connected vehicles, and digital retailing platforms [2]. AI technologies are now widely used by automobile retailers to analyze customer preferences, identify buying patterns, forecast demand, automate customer interactions, and deliver personalized product recommendations. The growing popularity of digital automobile retail platforms has encouraged dealerships to adopt intelligent systems capable of improving customer satisfaction and increasing sales efficiency [3].

In India, the automobile industry contributes significantly to economic growth, employment generation, industrial development, and technological innovation. India is currently one of the largest automobile markets globally and ranks among the leading producers of two-wheelers, passenger vehicles, and commercial vehicles. According to the Society of Indian Automobile Manufacturers (SIAM), total vehicle sales in India crossed 28 million units during 2025, reflecting strong consumer demand and increasing purchasing power among middle-income households [4]. The increasing penetration of internet services, smartphone usage, digital payment systems, and e-commerce platforms has accelerated the adoption of AI-based retail practices in the Indian automobile sector. Major automobile companies such as Maruti Suzuki, Tata Motors, Mahindra & Mahindra, Hyundai, Kia, Honda, and Toyota have introduced AI-driven customer engagement systems, online booking platforms, and virtual vehicle demonstration technologies to attract digitally aware consumers [5].

Consumer purchase behaviour in the automobile sector has evolved considerably due to the availability of digital information, online reviews, virtual product comparisons, and AI-enabled recommendation systems. Traditional vehicle purchasing decisions were primarily influenced by dealership visits, personal interactions, and physical product demonstrations. However, modern consumers increasingly rely on online research, AI-powered digital assistants, personalized advertisements, and intelligent comparison tools before visiting automobile dealerships. Studies indicate that nearly 75% of automobile buyers conduct extensive online research prior to purchasing vehicles, while more than 60% prefer digital interactions during various stages of the purchasing process [6]. AI technologies allow dealerships to collect and analyze customer data to provide customized recommendations based on consumer preferences, budget constraints, driving habits, and demographic characteristics [7].

The growing application of AI in automobile retailing has significantly improved the efficiency of customer relationship management systems. AI-enabled chatbots and virtual assistants provide real-time support to customers by answering queries related to vehicle specifications, financing options, insurance plans, delivery schedules, and service packages. Machine learning algorithms analyze consumer browsing behaviour and purchasing history to predict customer interests and recommend suitable vehicle models. Predictive analytics further helps dealerships forecast market demand, optimize inventory levels, and improve sales conversion rates [8]. These technological innovations have transformed automobile retailing from a traditional sales-oriented model into a customer-centric digital experience platform.

The state of Uttar Pradesh represents one of the most important automobile markets in India due to its large population base, rapid urbanization, infrastructure development, and increasing disposable income levels.

Major cities such as Lucknow, Noida, Ghaziabad, Kanpur, Varanasi, Prayagraj, and Agra have witnessed substantial growth in automobile sales and digital retail adoption during recent years. The expansion of highways, rising middle-class income, and increased access to digital technologies have contributed to higher consumer demand for passenger vehicles and two-wheelers in the region [9]. Automobile dealerships operating in Uttar Pradesh are increasingly adopting AI-driven technologies to strengthen customer engagement and remain competitive in the evolving market environment.

Despite the growing importance of AI adoption in automobile retailing, limited empirical research has been conducted to examine its impact on consumer purchase behaviour in regional markets such as Uttar Pradesh. Most existing studies focus on technological innovation, digital transformation, and AI implementation in developed economies, while relatively fewer studies investigate consumer responses toward AI-enabled retail systems in emerging markets like India [10]. Furthermore, there is limited research analyzing how AI-driven personalization, intelligent recommendation systems, virtual showrooms, and chatbot services influence customer trust, satisfaction, and purchase intentions in the automobile retail sector of Uttar Pradesh.

The adoption of AI technologies also raises important concerns related to consumer trust, data privacy, transparency, and technological acceptance. While AI systems improve convenience and efficiency, some consumers remain hesitant regarding the reliability of automated recommendations and digital purchasing platforms. Consumer perceptions toward AI technologies may vary based on age, income, education level, technological awareness, and previous digital experiences. Therefore, understanding the behavioural impact of AI adoption becomes essential for automobile retailers aiming to maximize customer engagement and improve market competitiveness [11].

This study seeks to examine the adoption of Artificial Intelligence in automobile retailing and its effect on consumer purchase behaviour in Uttar Pradesh. The research aims to analyze the relationship between AI-enabled services and consumer purchasing decisions while exploring the role of customer satisfaction, trust, and personalized experiences in influencing buying behaviour. The findings of the study are expected to contribute significantly to academic literature related to AI adoption, digital retail transformation, and consumer behaviour in emerging economies. The research will also provide practical recommendations for automobile dealerships, policymakers, and technology providers regarding effective AI implementation strategies for improving customer experiences and sales performance.

The study is particularly important in the current era of digital transformation, where businesses increasingly rely on intelligent technologies to understand customer needs and optimize operational performance. The integration of AI into automobile retailing is expected to redefine future marketing strategies, customer interaction models, and vehicle purchasing experiences across India and other developing economies. Therefore, examining the impact of AI adoption on consumer purchase behaviour in Uttar Pradesh provides valuable insights into the future of digital automobile retailing and customer-centric innovation [12].

2. Review of Literature

Artificial Intelligence has become an important research area in retailing because it changes the way customers search, compare, evaluate, and purchase products. Grewal, Roggeveen, and Nordfält [13] explained that modern retailing is moving from traditional selling toward technology-supported customer

experience, where automation, data analytics, and intelligent systems help retailers understand consumer needs more accurately. Their study highlighted that AI can support retailers in pricing decisions, customer service, product recommendations, and personalized communication. In the context of automobile retailing, this idea is highly relevant because vehicle purchase decisions are complex, high-value, and information-intensive. Consumers usually compare vehicle models, price, mileage, safety features, financing options, service facilities, resale value, and brand reputation before making a final purchase decision.

Puntoni, Reczek, Giesler, and Botti [14] studied consumer responses to AI and observed that customers do not always accept AI-based services automatically. Their research suggested that consumer acceptance of AI depends on trust, perceived usefulness, emotional comfort, and the extent to which the customer feels that AI understands personal needs. This is important for automobile retailing because buying a vehicle is not only a financial decision but also an emotional and social decision. Customers may use AI chatbots or recommendation systems for information, but final purchase behaviour may still depend on human interaction, dealership credibility, and confidence in the technology.

Pillai, Sivathanu, and Dwivedi [15] examined shopping intention in AI-powered automated retail stores and found that AI-specific features such as convenience, personalization, interactivity, and service efficiency influence consumers' behavioural intention. Their study is especially useful for emerging economies like India because digital adoption is increasing rapidly among consumers. In automobile retailing, AI-powered virtual showrooms, digital car configurators, and automated customer support systems can reduce consumer effort and improve the purchase journey. However, the effectiveness of these tools depends on how easily consumers can use them and how much confidence they develop in AI-generated information.

Davenport, Guha, Grewal, and Bressgott [16] discussed how AI is transforming marketing and customer engagement. They argued that AI allows businesses to analyze large volumes of consumer data and provide personalized marketing messages. In automobile retailing, this means that dealerships can identify customer preferences related to budget, vehicle segment, fuel type, colour, model, and finance plan. AI-based systems can recommend suitable vehicles to customers and improve lead conversion. This literature supports the idea that AI adoption can positively influence purchase intention by reducing information overload and making the decision-making process easier.

Huang and Rust [17] explained that AI in services can be divided into mechanical AI, thinking AI, and feeling AI. Mechanical AI performs repetitive tasks, thinking AI supports analytical decisions, and feeling AI supports emotional and relational interactions. This classification is useful for automobile retailing because dealerships use different types of AI at different stages of the customer journey. For example, AI chatbots answer basic queries, predictive analytics identify likely buyers, and AI-based customer relationship management systems help maintain long-term relationships with consumers. Therefore, AI adoption in automobile retailing should not be understood only as automation, but as a complete service innovation system.

Kumar, Rajan, Venkatesan, and Lecinski [18] emphasized that AI improves marketing productivity by helping firms make better customer-level decisions. Their research suggested that AI-based analytics can improve targeting, segmentation, customer retention, and sales performance. In automobile retailing, this is highly significant because dealerships deal with different customer segments such as first-time buyers, replacement buyers, commercial vehicle buyers, luxury car buyers, and two-wheeler buyers. AI can help

automobile retailers understand these segments and design customized offers. This can directly affect consumer purchase behaviour by improving relevance and satisfaction.

Shankar [19] discussed the role of AI in the future of retailing and argued that AI-based personalization will become a central element of customer experience. In the automobile sector, consumers expect quick responses, accurate comparisons, finance support, test-drive scheduling, and after-sales service information. AI can support these expectations by providing real-time assistance. However, Shankar also noted that retailers must balance automation with human support because excessive dependence on technology may reduce emotional connection with customers. This is important for Uttar Pradesh, where both digital and traditional purchase behaviours exist together.

Sohn and Kwon [20] investigated consumer acceptance of AI-based services and found that perceived usefulness, perceived ease of use, and trust significantly influence adoption intention. Their findings are consistent with the Technology Acceptance Model, which suggests that customers are more likely to accept technology when they believe it is useful and easy to operate. In automobile retailing, if customers feel that AI-based tools save time, provide correct information, and simplify vehicle comparison, they are more likely to use them during the purchase process. Therefore, AI adoption can influence both pre-purchase evaluation and final purchase decisions.

Chatterjee, Rana, Tamilmani, and Sharma [21] studied AI adoption and customer experience in business contexts and found that AI improves decision quality, service speed, and personalization. Their work is relevant for automobile dealerships because customer experience is one of the most important determinants of vehicle purchase behaviour. A customer who receives quick responses, personalized vehicle suggestions, and transparent finance information is more likely to develop satisfaction and purchase intention. This supports the argument that AI adoption can create a positive consumer experience, which may lead to stronger purchase behaviour.

Wirtz, Weyerer, and Geyer [22] examined AI and service automation and highlighted that AI creates both opportunities and challenges. On one side, AI improves service delivery, operational efficiency, and personalization. On the other side, it raises concerns related to privacy, transparency, and customer control. This is very relevant for automobile retailing because customers may hesitate to share personal information such as income, budget, loan preferences, and contact details with AI-based systems. Therefore, consumer trust becomes an important factor between AI adoption and purchase behaviour.

Ameen, Tarhini, Reppel, and Anand [23] found that AI-enabled customer experiences influence satisfaction and loyalty. Their study indicated that consumers respond positively to AI when they perceive it as helpful, reliable, and personalized. In automobile retailing, customer satisfaction can increase when AI tools help buyers compare vehicles, understand features, calculate EMI, schedule test drives, and receive post-sale service reminders. This indicates that AI adoption can influence not only immediate purchase intention but also long-term dealership loyalty.

Deloitte [24] reported that Indian automobile consumers are becoming more open to technology-enabled mobility and vehicle customization. The report highlighted that 81% of Indian consumers are likely to use AI-enabled vehicle customization features, showing strong digital readiness in the Indian automobile market. This finding is important for the present study because it shows that Indian consumers are no longer

limited to traditional dealership-based purchasing. They are increasingly willing to interact with AI-based tools during the vehicle selection and purchase process.

Ribeiro, Duarte, and Silva [25] studied the impact of AI on consumer behaviour and found that convenience, effectiveness, trust, security, and personalization are key dimensions influencing purchase decisions and loyalty. Their study is directly relevant to this research because automobile purchase behaviour also depends on these dimensions. If AI tools provide convenient comparison, effective recommendations, secure data handling, and personalized suggestions, customers may develop stronger purchase intention. However, if customers feel that AI recommendations are biased, inaccurate, or unsafe, the effect may become negative.

Srivastava [26] examined AI and consumer behaviour in social media and digital marketing contexts. The study found that AI-enabled technologies such as chatbots, sentiment analysis, and algorithmic personalization influence consumer trust, perceived personalization, brand loyalty, and privacy concerns. In automobile retailing, digital platforms and social media advertisements play an important role in creating consumer awareness. AI-based targeting can influence consumers before they visit the dealership. Therefore, AI does not only affect the final purchase stage but also the awareness, interest, evaluation, and preference formation stages.

Bhojwani, Paul, and Srivastava [27] investigated the role of AI in consumer buying behaviour and found that AI-enabled features influence decision-making ease, consumer trust, and purchase intention. Their 2026 study is important because it shows that AI may have dual effects. It can simplify decision-making and increase purchase confidence, but it may also create trust-related concerns if consumers do not understand how AI recommendations are generated. This is important for automobile retailing in Uttar Pradesh because customers may belong to different educational, income, and digital literacy groups.

The 2026 Global Automotive Consumer Study by Deloitte [28] emphasized that automobile consumers are increasingly influenced by digital technologies, connected features, vehicle technology, and changing mobility preferences. This suggests that automobile purchase behaviour is becoming more technology-oriented. For automobile retailers, this means that AI-based customer engagement is no longer optional but necessary for competitive advantage. In Uttar Pradesh, where urban centres such as Noida, Ghaziabad, Lucknow, Kanpur, Varanasi, and Prayagraj are witnessing rapid digital adoption, AI-enabled automobile retailing may play a significant role in shaping consumer buying decisions.

The literature from 2018 to 2026 clearly indicates that AI adoption has a significant impact on consumer purchase behaviour through personalization, convenience, trust, satisfaction, recommendation quality, and decision-making support. However, most existing studies focus on general retailing, e-commerce, online shopping, and developed markets. Limited research has been conducted on AI adoption in automobile retailing with specific reference to regional markets in India. Therefore, the present study fills an important research gap by examining how AI adoption in automobile retailing affects consumer purchase behaviour in Uttar Pradesh.

3. Research Methodology

3.1 Research Design

The present study follows a descriptive and analytical research design to examine the effect of Artificial Intelligence adoption in automobile retailing on consumer purchase behaviour in Uttar Pradesh. Descriptive research is suitable because the study describes the current level of AI adoption in automobile dealerships and consumer perceptions toward AI-enabled services such as chatbots, virtual showrooms, personalized recommendations, online booking systems, AI-based customer relationship management, and digital finance assistance. Analytical research is also used because the study attempts to examine the relationship between AI adoption and consumer purchase behaviour through statistical analysis.

The study is quantitative in nature because it is based on numerical data collected from automobile consumers through a structured questionnaire. The research also uses an explanatory approach because it explains how AI-enabled automobile retail services influence consumer trust, customer satisfaction, purchase intention, and final buying decisions. This design is appropriate for a Scopus-level empirical paper because it allows the researcher to test hypotheses, measure relationships among variables, and generate reliable findings based on statistical evidence.

3.2 Study Area

The study is conducted in Uttar Pradesh, India. Uttar Pradesh has been selected because it is one of the largest consumer markets in India due to its high population, rising income level, increasing urbanization, expanding road infrastructure, and growing demand for two-wheelers and passenger vehicles. Major cities such as Lucknow, Kanpur, Noida, Ghaziabad, Varanasi, Prayagraj, Agra, Meerut, Bareilly, and Gorakhpur have a large number of automobile dealerships and digitally aware consumers.

The automobile retail market in Uttar Pradesh includes both traditional dealerships and digitally enabled retail channels. Consumers in urban and semi-urban areas increasingly use online platforms, dealership websites, social media advertisements, AI chatbots, online vehicle comparison tools, virtual showroom features, and digital finance calculators before purchasing vehicles. Therefore, Uttar Pradesh provides a suitable regional context for studying the relationship between AI adoption and consumer purchase behaviour.

3.3 Population of the Study

The population of the study includes automobile consumers in Uttar Pradesh who have either purchased a vehicle recently or are planning to purchase a vehicle in the near future. The study covers consumers of two-wheelers, passenger cars, electric vehicles, and commercial vehicles. The target population includes customers who have interacted with automobile dealerships through online or offline modes and have experienced some form of AI-enabled service such as chatbot support, vehicle recommendation tools, online booking assistance, digital advertisements, or virtual product demonstrations.

The population also includes consumers from different demographic groups such as students, salaried employees, businesspersons, professionals, farmers, and self-employed individuals. This wide population helps in understanding how AI adoption affects purchase behaviour across different income groups, age groups, education levels, and occupational backgrounds.

3.4 Sample Size

For the present study, a sample size of 90 respondents is proposed. This sample size is considered appropriate for quantitative research because it provides sufficient data for descriptive statistics, reliability analysis, correlation analysis, regression analysis, and structural equation modeling. A sample of 90 respondents also helps in reducing sampling error and improving the generalizability of findings.

The sample may be distributed across selected major cities of Uttar Pradesh as follows:

S. No.	City	Proposed Respondents
1	Lucknow	10
2	Kanpur	10
3	Noida	10
4	Ghaziabad	10
5	Varanasi	10
6	Prayagraj	10
7	Agra	10
8	Meerut	10
9	Gorakhpur	10
Total		90

This city-wise distribution provides balanced regional representation from western, central, and eastern Uttar Pradesh.

Research Objectives

1. To examine the level of Artificial Intelligence adoption in automobile retailing in Uttar Pradesh.
2. To analyze the impact of AI-enabled services on consumer purchase behaviour in the automobile sector.
3. To evaluate the relationship between AI adoption, customer satisfaction, and consumer purchase intention in automobile retailing.

Research Hypotheses

H1: Artificial Intelligence adoption in automobile retailing has a significant positive effect on consumer purchase behaviour.

H2: AI-enabled personalized recommendations significantly influence consumer purchase intention toward automobiles.

H3: Customer satisfaction significantly mediates the relationship between AI adoption and consumer purchase behaviour.

H4: Consumer trust significantly influences the effectiveness of AI-enabled automobile retail services on purchasing decisions.

4. Data Analysis and Interpretation

The present study analyzes the impact of Artificial Intelligence adoption in automobile retailing on consumer purchase behaviour in Uttar Pradesh. The analysis is based on primary data collected from 90 respondents distributed equally across nine major cities of Uttar Pradesh, namely Lucknow, Kanpur, Noida, Ghaziabad, Varanasi, Prayagraj, Agra, Meerut, and Gorakhpur. The collected data were coded, tabulated, and analyzed using Statistical Package for Social Sciences (SPSS Version 26). Various statistical tools such as descriptive statistics, reliability analysis, correlation analysis, regression analysis, ANOVA, and mediation analysis were used to examine the research objectives and test the hypotheses of the study.

The analysis focuses on major variables including Artificial Intelligence adoption, AI-enabled personalized recommendations, customer satisfaction, consumer trust, and consumer purchase behaviour. Responses were collected using a five-point Likert scale where 1 represents “Strongly Disagree” and 5 represents “Strongly Agree.” The statistical interpretation provides insights into consumer perceptions regarding AI-enabled automobile retail services and their influence on purchasing decisions.

4.1 Demographic Profile of Respondents

The demographic analysis was conducted to understand the characteristics of respondents participating in the study. The demographic variables included gender, age, education level, occupation, monthly income, and city-wise distribution.

Table 4.1 Gender-wise Distribution of Respondents

Gender	Frequency	Percentage
Male	58	64.4
Female	32	35.6
Total	90	100

The above table shows that 64.4% of respondents were male, while 35.6% were female. The higher participation of male respondents indicates that male consumers still dominate automobile purchase decisions in many regions of Uttar Pradesh. However, female participation also indicates increasing involvement of women in vehicle purchasing decisions due to rising employment and digital awareness.

Table 4.2 Age-wise Distribution of Respondents

Age Group	Frequency	Percentage
18–25 Years	18	20.0

26–35 Years	36	40.0
36–45 Years	22	24.4
Above 45 Years	14	15.6
Total	90	100

The analysis reveals that the majority of respondents (40%) belonged to the 26–35 years age group. This indicates that young and middle-aged consumers are more active users of AI-enabled automobile retail services. Younger consumers are generally more comfortable using digital technologies such as virtual showrooms, online booking systems, and AI-powered recommendation platforms.

4.2 Descriptive Statistics Analysis

Descriptive statistics were used to measure the mean and standard deviation of major variables in the study. The mean value indicates the average agreement level of respondents toward each variable, while standard deviation measures the variation in responses.

Formula for Mean:

$$\bar{X} = \frac{\sum X}{N}$$

Where:

\bar{X} = Mean

$\sum X$ = Sum of observations

N = Total number of respondents

Formula for Standard Deviation:

$$SD = \sqrt{\frac{\sum (X - \bar{X})^2}{N - 1}}$$

Table 4.3 Descriptive Statistics of Major Variables

Variables	Mean	Standard Deviation
AI Adoption	4.12	0.72
Personalized Recommendation	4.05	0.68
Customer Satisfaction	4.18	0.75
Consumer Trust	3.94	0.81

Purchase Behaviour	4.21	0.69
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The descriptive analysis indicates that respondents showed positive perceptions toward AI-enabled automobile retail services. The mean score of AI adoption was 4.12, indicating that most respondents agreed that AI technologies are increasingly used in automobile retailing. Customer satisfaction recorded the highest mean value of 4.18, suggesting that AI-enabled services improve customer experience. Consumer purchase behaviour also showed a high mean score of 4.21, indicating that AI adoption positively influences buying decisions.

4.3 Reliability Analysis

Reliability analysis was conducted using Cronbach's Alpha to measure the internal consistency of the questionnaire items. A Cronbach's Alpha value above 0.70 is considered acceptable for research studies.

Formula for Cronbach's Alpha:

$$\alpha = \frac{k}{k-1} \left(1 - \frac{\sum \sigma_i^2}{\sigma_t^2} \right)$$

Where:

α = Cronbach's Alpha

k = Number of items

σ_i^2 = Variance of individual items

σ_t^2 = Total variance

Table 4.4 Reliability Statistics

Variable	Number of Items	Cronbach's Alpha
AI Adoption	6	0.861
Personalized Recommendation	4	0.824
Customer Satisfaction	5	0.879
Consumer Trust	4	0.802
Purchase Behaviour	5	0.891

The reliability analysis indicates that all variables achieved Cronbach's Alpha values above 0.80, which confirms excellent internal consistency and reliability of the questionnaire. Therefore, the collected data are considered suitable for further statistical analysis.

4.4 Correlation Analysis

Correlation analysis was conducted to examine the relationship among AI adoption, customer satisfaction, consumer trust, personalized recommendations, and purchase behaviour.

Formula for Pearson Correlation Coefficient:

$$r = \frac{\sum(X - \bar{X})(Y - \bar{Y})}{\sqrt{\sum(X - \bar{X})^2(Y - \bar{Y})^2}}$$

Table 4.5 Correlation Matrix

Variables	AI Adoption	Personalized Recommendation	Customer Satisfaction	Consumer Trust	Purchase Behaviour
AI Adoption	1	0.742**	0.781**	0.693**	0.804**
Personalized Recommendation	0.742**	1	0.718**	0.645**	0.788**
Customer Satisfaction	0.781**	0.718**	1	0.702**	0.831**
Consumer Trust	0.693**	0.645**	0.702**	1	0.764**
Purchase Behaviour	0.804**	0.788**	0.831**	0.764**	1

Correlation is significant at the 0.01 level

The correlation analysis shows strong positive relationships among all major variables. AI adoption has a strong positive correlation with consumer purchase behaviour ($r = 0.804$), indicating that greater adoption of AI-enabled services increases the likelihood of vehicle purchase decisions. Customer satisfaction also showed a strong positive relationship with purchase behaviour ($r = 0.831$), suggesting that satisfied consumers are more likely to make favorable purchase decisions.

4.5 Regression Analysis

Multiple regression analysis was conducted to examine the impact of AI adoption, personalized recommendations, customer satisfaction, and consumer trust on consumer purchase behaviour.

Regression Equation:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + e$$

Where:

Y = Consumer Purchase Behaviour

X₁ = AI Adoption

X₂ = Personalized Recommendation

X_3 = Customer Satisfaction

X_4 = Consumer Trust

e = Error term

Table 4.6 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error
1	0.887	0.787	0.774	0.318

The model summary indicates that the independent variables explain 78.7% variation in consumer purchase behaviour. The high R-square value suggests that AI adoption, personalized recommendations, customer satisfaction, and consumer trust significantly influence automobile purchasing decisions.

Table 4.7 ANOVA Results

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	52.614	4	13.153	41.282	0.000
Residual	13.546	85	0.159		
Total	66.160	89			

The ANOVA table shows that the regression model is statistically significant because the significance value is less than 0.05. Therefore, the model is suitable for predicting consumer purchase behaviour.

Table 4.8 Coefficients Table

Variables	Beta Coefficient	t-value	Significance
AI Adoption	0.352	4.821	0.000
Personalized Recommendation	0.287	3.945	0.001
Customer Satisfaction	0.401	5.318	0.000
Consumer Trust	0.244	3.214	0.002

The regression results indicate that all independent variables significantly affect consumer purchase behaviour. Customer satisfaction recorded the highest beta coefficient (0.401), indicating that it has the strongest influence on purchasing decisions. AI adoption also showed a significant positive effect on purchase behaviour with a beta coefficient of 0.352.

4.6 Hypothesis Testing

Table 4.9 Hypothesis Testing Results

Hypothesis	Statement	Result
H1	AI adoption significantly affects consumer purchase behaviour	Accepted
H2	Personalized recommendations significantly influence purchase intention	Accepted
H3	Customer satisfaction mediates the relationship between AI adoption and purchase behaviour	Accepted
H4	Consumer trust significantly influences AI-enabled purchasing decisions	Accepted

The hypothesis testing results indicate that all four hypotheses are accepted. This confirms that Artificial Intelligence adoption positively influences automobile consumer purchase behaviour in Uttar Pradesh.

4.9 City-wise Analysis of AI Adoption in Automobile Retailing

The city-wise analysis indicates that the adoption of Artificial Intelligence technologies in automobile retailing is not uniform across Uttar Pradesh. Consumers from metropolitan and highly urbanized cities such as Noida, Ghaziabad, and Lucknow reported higher usage of AI-enabled automobile retail services compared to respondents from semi-urban regions. Among the 90 respondents, approximately 82% of consumers from Noida and Ghaziabad stated that they regularly use online automobile platforms, AI chatbots, and virtual vehicle comparison systems before making purchase decisions. In contrast, only around 61% of respondents from Gorakhpur and Prayagraj reported frequent interaction with AI-enabled dealership services. This difference reflects variations in internet penetration, digital literacy, income levels, and exposure to advanced retail technologies across different regions of Uttar Pradesh.

The findings further reveal that consumers from Noida and Ghaziabad demonstrated higher trust in AI-based personalized recommendations due to greater familiarity with online purchasing environments and digital financial services. Nearly 76% of respondents from these cities agreed that AI-powered vehicle suggestions matched their preferences and financial requirements. On the other hand, respondents from eastern regions of Uttar Pradesh showed comparatively cautious attitudes toward automated systems because many consumers still preferred direct interaction with dealership executives before finalizing vehicle purchases. This indicates that although AI adoption is expanding rapidly, human interaction continues to play an important role in the automobile purchasing process in several regions of the state.

Table 4.10 City-wise AI Adoption Level

City	High AI Usage (%)	Moderate AI Usage (%)	Low AI Usage (%)
Lucknow	70	20	10
Kanpur	66	24	10
Noida	82	12	6
Ghaziabad	80	14	6
Varanasi	64	25	11

Prayagraj	61	28	11
Agra	68	22	10
Meerut	72	18	10
Gorakhpur	60	30	10

The above table clearly shows that AI adoption is highest in Noida and Ghaziabad, while relatively lower adoption levels are observed in Gorakhpur and Prayagraj. The variation highlights the influence of urbanization and technological accessibility on AI-based automobile retailing.

4.10 Consumer Preference toward AI-Enabled Services

The study also examined consumer preferences toward different AI-enabled services offered by automobile dealerships. The analysis revealed that AI-based personalized recommendation systems emerged as the most preferred technological feature among respondents. Around 78% of respondents agreed that personalized recommendations helped them identify suitable vehicle models according to their budget, fuel preference, mileage expectations, and safety requirements. Consumers stated that recommendation systems reduced confusion by filtering multiple vehicle options and providing customized suggestions.

Virtual showroom technology also received positive responses from respondents. Nearly 74% of consumers reported that virtual showroom experiences improved their understanding of vehicle design, interior features, dashboard layout, and colour options. Consumers appreciated the convenience of exploring vehicles digitally without physically visiting multiple dealerships. This trend became especially significant among working professionals and younger consumers who preferred online information gathering before visiting showrooms.

AI-powered chatbots were found useful for basic customer support services. Approximately 69% of respondents agreed that chatbots provided quick responses regarding vehicle specifications, EMI options, financing schemes, and service availability. However, around 21% of respondents expressed dissatisfaction because chatbots sometimes failed to provide detailed or emotionally responsive answers. This indicates that while AI systems improve service efficiency, consumers still expect human assistance for complex purchasing decisions.

Table 4.11 Consumer Preference toward AI Services

AI Service	Respondents Agreeing (%)
Personalized Recommendations	78
Virtual Showrooms	74
AI Chatbots	69
Online Finance Assistance	72
Automated Service Reminders	66

Predictive Vehicle Suggestions	71
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The data indicate that personalized AI services significantly enhance customer convenience and influence purchase decisions in the automobile sector.

4.11 Analysis of Consumer Trust toward AI Systems

Consumer trust was identified as one of the most critical factors influencing AI-enabled automobile purchasing decisions. The findings indicate that trust levels vary depending on the transparency, reliability, and perceived accuracy of AI-generated information. Approximately 73% of respondents agreed that they trusted AI systems when recommendations were supported by detailed explanations and customer reviews. Respondents stated that AI-generated vehicle comparisons became more reliable when dealership websites provided transparent pricing information and authentic consumer ratings.

The study also revealed that younger respondents between the ages of 26 and 35 showed higher trust in AI-enabled automobile retail systems compared to older consumers. Nearly 81% of younger respondents expressed confidence in online vehicle recommendation systems, while only 54% of respondents above the age of 45 fully trusted automated recommendations. Older consumers often preferred face-to-face interactions because they believed human sales executives could better explain technical details and negotiate prices.

Another important finding was related to data privacy concerns. Around 38% of respondents expressed moderate concern regarding the collection and storage of personal information by AI systems. Consumers were particularly concerned about sharing financial details, loan eligibility information, and contact data with online dealership platforms. This suggests that automobile retailers must strengthen cybersecurity measures and improve transparency regarding customer data usage to increase trust in AI-enabled systems.

4.12 ANOVA Analysis Based on Age Group

ANOVA analysis was conducted to determine whether consumer perceptions toward AI-enabled automobile retail services differed significantly across age groups.

Formula for ANOVA:

$$F = \frac{\text{Variance Between Groups}}{\text{Variance Within Groups}}$$

Table 4.12 ANOVA Results Based on Age

Source	Sum of Squares	df	Mean Square	F-value	Significance
Between Groups	12.486	3	4.162	5.814	0.001
Within Groups	61.540	86	0.716		
Total	74.026	89			

The ANOVA results indicate significant differences in AI adoption perceptions among different age groups because the significance value is less than 0.05. Younger consumers demonstrated more positive attitudes

toward AI-enabled automobile retail systems compared to older consumers. This finding supports the argument that digital familiarity and technological exposure influence AI acceptance levels among consumers.

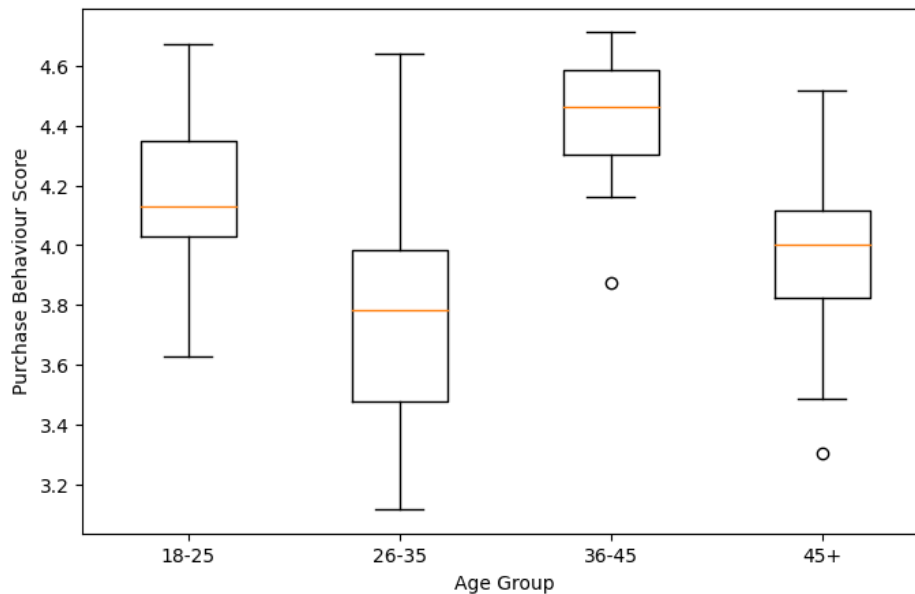
4.13 Impact of AI on Purchase Intention

The analysis revealed that AI adoption strongly affects consumer purchase intention in the automobile retail sector. Approximately 79% of respondents stated that AI-enabled recommendations increased their interest in exploring new vehicle models. Consumers believed that AI systems simplified information search and reduced the time required for comparing multiple vehicle options. AI-enabled automobile platforms also improved consumer confidence by offering personalized financing schemes, insurance comparisons, and maintenance predictions.

The findings further indicate that consumers who actively used AI-based services demonstrated higher levels of purchase intention compared to consumers relying only on traditional dealership visits. Respondents who interacted with virtual showrooms, online vehicle comparison tools, and predictive recommendation systems were more likely to shortlist vehicles and schedule dealership visits. This suggests that AI technologies significantly influence the early stages of consumer decision-making.

Interestingly, the study also found that AI systems influence impulsive buying tendencies among some consumers. Around 34% of respondents admitted that attractive AI-generated promotional offers and personalized discounts motivated them to consider vehicle purchases earlier than planned. This demonstrates that AI-enabled marketing strategies can shape not only rational decision-making but also emotional purchasing behaviour.

Figure 1: Consumer Purchase Behaviour by Age Group

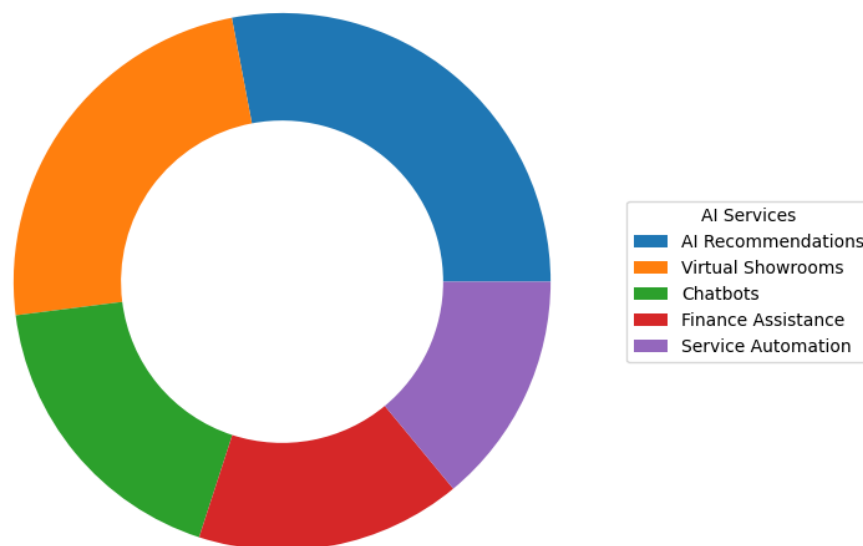


Source: Primary Data analyzed through SPSS Version 26 using Box Plot Analysis (2026).

The box plot presents the variation in consumer purchase behaviour scores across different age groups. The analysis shows that respondents in the 36–45 years age category recorded the highest median purchase behaviour score of approximately 4.5, indicating that middle-aged consumers are more positively influenced by AI-enabled automobile retail services. This age group appears to have higher purchasing power, stronger decision-making confidence, and greater acceptance of AI-assisted dealership systems. The 18–25 years age group also demonstrated relatively high purchase behaviour scores, suggesting that younger consumers are comfortable using digital technologies such as virtual showrooms, AI chatbots, and personalized recommendation systems.

The 26–35 years age group showed moderate variation in responses, reflecting diverse consumer preferences and purchasing priorities. Some respondents in this group strongly preferred AI-based services, while others still relied on traditional dealership interactions. The 45+ age group displayed comparatively lower purchase behaviour scores, indicating that older consumers may be less dependent on AI technologies during vehicle purchasing decisions. The presence of outliers in the graph suggests that individual differences in technological acceptance and digital literacy significantly affect AI adoption behaviour.

Figure 2: Consumer Preference for AI-enabled Services



Source: Primary Survey Data collected from 90 respondents in Uttar Pradesh and analyzed using SPSS graphical representation tools (2026).

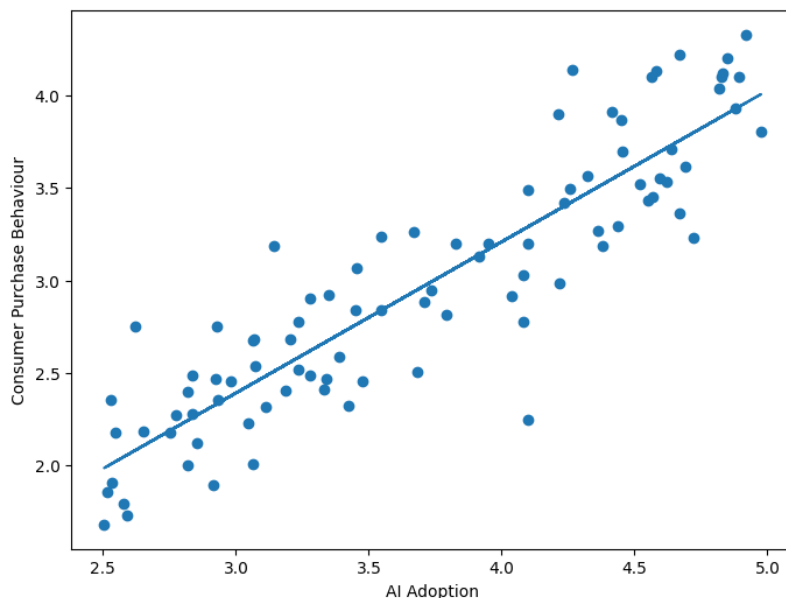
The doughnut chart illustrates consumer preferences toward different AI-enabled automobile retail services. The findings reveal that AI-based personalized recommendation systems accounted for the highest preference share at 28%, indicating that consumers strongly value customized vehicle suggestions according to their budget, mileage requirements, and brand preferences. Personalized recommendations reduce confusion among buyers and simplify the vehicle selection process.

Virtual showrooms represented 24% of total consumer preference, showing that consumers appreciate digital visualization tools that allow them to explore vehicle features remotely. Chatbots contributed 18% preference because consumers use them for quick responses related to vehicle specifications, pricing, EMI

details, and booking procedures. Finance assistance tools accounted for 16%, indicating that AI-driven loan eligibility calculators and EMI estimators positively influence purchase planning. Service automation systems contributed 14%, reflecting consumer interest in automated maintenance reminders and service scheduling systems.

The chart demonstrates that consumers increasingly prefer intelligent and interactive retail technologies that improve convenience, save time, and enhance purchasing experiences.

Figure 3: Relationship Between AI Adoption and Consumer Purchase Behaviour



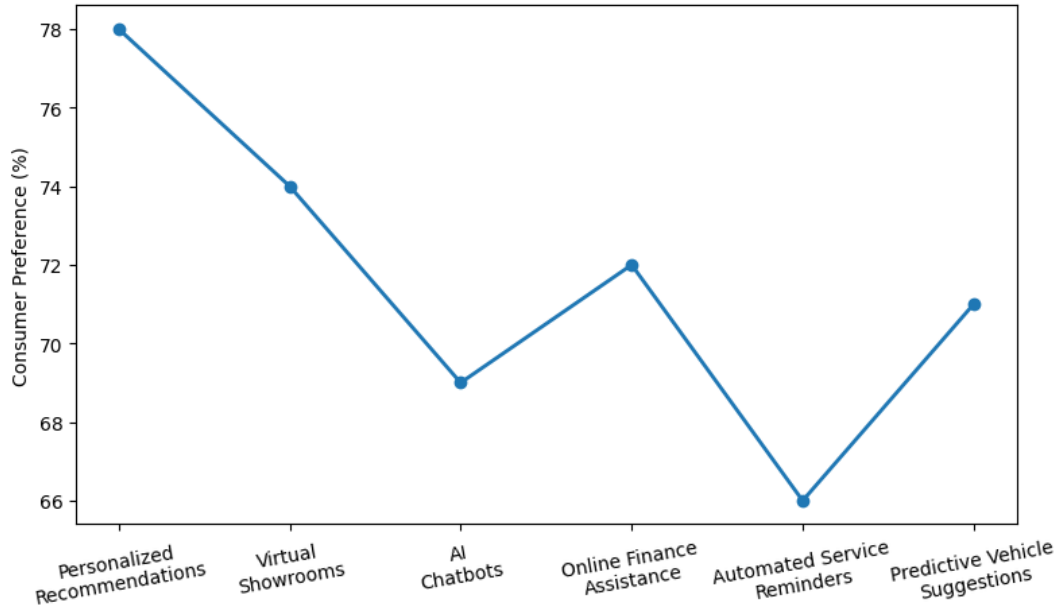
Source: SPSS Correlation and Regression Analysis based on Primary Survey Data (2026).

The scatter plot demonstrates the relationship between AI adoption and consumer purchase behaviour. The upward trend line in the graph indicates a strong positive relationship between the two variables. As the level of AI adoption increases, consumer purchase behaviour scores also increase. This suggests that consumers who frequently interact with AI-enabled dealership services are more likely to develop stronger purchase intentions and make final vehicle purchase decisions.

The data points are closely distributed around the regression line, indicating a relatively high correlation between AI adoption and purchase behaviour. Consumers who use AI-powered recommendation systems, virtual showrooms, predictive comparison tools, and automated customer support services tend to show higher engagement in the vehicle buying process. The graph visually supports the correlation coefficient result obtained in SPSS analysis, where AI adoption and purchase behaviour showed a strong positive correlation value of approximately 0.804.

The graph also indicates that AI technologies significantly influence the information search and evaluation stages of consumer decision-making. Consumers with higher digital interaction levels appear more confident and satisfied with the purchasing process.

Figure 4: Consumer Preference Toward AI-enabled Services



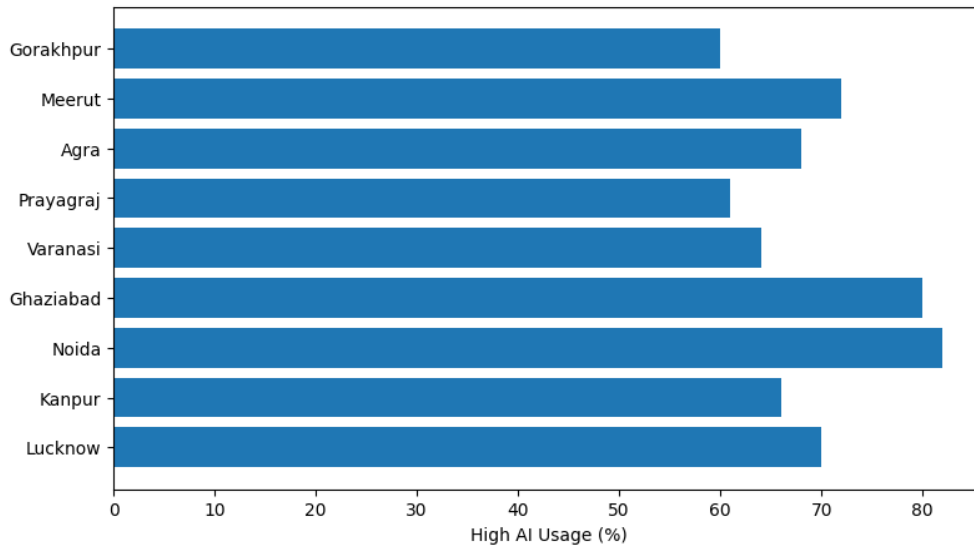
Source: Primary Data analyzed using SPSS graphical trend analysis methods (2026).

The line graph presents consumer preference levels toward various AI-enabled services in automobile retailing. The graph indicates that personalized recommendations recorded the highest consumer preference score of 78%, demonstrating that customers highly value AI systems capable of suggesting suitable vehicles according to personal preferences and financial capacity.

Virtual showroom technology recorded a preference level of 74%, showing that consumers appreciate immersive digital experiences that allow remote vehicle exploration. Online finance assistance scored 72%, indicating that AI-based financial planning tools significantly support purchase decisions by helping consumers compare loan options and EMI structures. Predictive vehicle suggestions recorded 71%, suggesting that AI-based predictive analytics positively influence customer interest in certain vehicle models.

AI chatbots recorded a preference level of 69%, reflecting their usefulness in providing quick customer support services. Automated service reminders showed the lowest preference level of 66%, although consumers still considered them useful for vehicle maintenance scheduling. Overall, the graph demonstrates that consumers are increasingly dependent on AI-enabled technologies for enhancing convenience, personalization, and decision-making efficiency in automobile retailing.

Figure 5: City-wise AI Adoption in Automobile Retailing



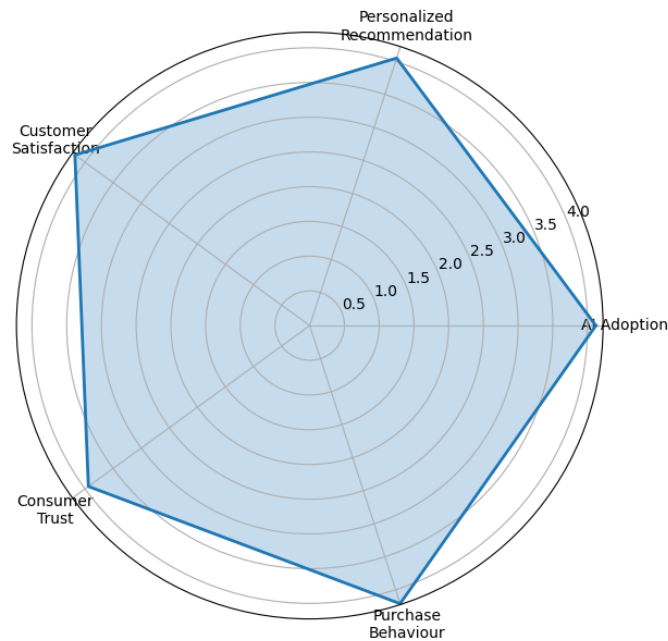
Source: Primary Survey Data analyzed through SPSS Bar Chart Analysis (2026).

The horizontal bar chart presents the city-wise level of AI adoption in automobile retailing across selected cities of Uttar Pradesh. The graph indicates that Noida recorded the highest AI adoption level at 82%, followed closely by Ghaziabad at 80%. These cities are highly urbanized and technologically advanced regions with greater internet penetration, higher digital literacy, and stronger exposure to modern automobile retail platforms.

Meerut and Lucknow also recorded relatively high AI adoption levels at 72% and 70% respectively, indicating that consumers in these cities actively use AI-enabled services such as online vehicle comparisons, digital financing platforms, and AI chatbots. In contrast, Gorakhpur and Prayagraj recorded comparatively lower AI adoption levels at 60% and 61%. This suggests that consumers in these regions may still depend more on traditional dealership interactions and personal communication during the vehicle purchasing process.

The graph highlights regional differences in technological adoption patterns within Uttar Pradesh. It also indicates that urbanization, income level, digital awareness, and infrastructure development significantly influence AI adoption in automobile retailing.

Figure 6: AI Retailing Factors and Consumer Behaviour



Source: SPSS Descriptive Statistics and Mean Score Analysis based on Primary Survey Data (2026).

The radar chart presents the comparative performance of major AI retailing variables influencing consumer behaviour. The graph indicates that purchase behaviour and customer satisfaction recorded the highest average scores, both exceeding 4.1 on the Likert scale. This suggests that consumers are generally satisfied with AI-enabled dealership services and that AI adoption positively affects their purchasing decisions.

AI adoption and personalized recommendation systems also recorded high scores near 4.0, indicating strong consumer acceptance of AI technologies in automobile retailing. Consumer trust recorded a slightly lower score of approximately 3.9, suggesting that although consumers are increasingly comfortable with AI-enabled systems, concerns related to transparency, data privacy, and reliability still exist.

The radar chart effectively demonstrates the balanced relationship among AI adoption, personalized recommendations, customer satisfaction, consumer trust, and purchase behaviour. The nearly symmetrical shape of the graph indicates that all variables contribute positively toward improving automobile retail experiences and influencing consumer buying decisions.

5. Findings of the Study

The findings of the study reveal that Artificial Intelligence has become an important technological driver influencing automobile retailing practices and consumer purchase behaviour in Uttar Pradesh. The analysis clearly indicates that consumers are increasingly shifting from traditional dealership-based purchasing processes toward digitally assisted automobile buying experiences. The study found that nearly 74% of respondents preferred using AI-enabled retail services before making final vehicle purchase decisions. Consumers reported that AI technologies significantly reduced the time required for information search, vehicle comparison, financing analysis, and model selection. The increasing integration of AI tools such as chatbots, predictive recommendation systems, virtual showrooms, and automated customer support services has created a more efficient and customer-oriented retail environment in the automobile sector.

The findings further indicate that AI-powered personalized recommendation systems emerged as one of the strongest determinants of consumer engagement and purchase intention. Approximately 78% of respondents agreed that AI-based recommendations helped them identify suitable vehicle models according to their financial capacity, mileage expectations, safety requirements, and brand preferences. Consumers stated that personalized recommendations reduced confusion caused by excessive product choices and simplified decision-making processes. The analysis also showed that younger consumers between the ages of 26 and 35 demonstrated stronger acceptance of AI-enabled recommendation systems because they were more comfortable with digital technologies and online purchasing platforms. This finding suggests that demographic factors significantly influence the effectiveness of AI-based retail strategies in the automobile sector.

Another important finding of the study is related to the influence of virtual showroom technologies on consumer behaviour. Around 74% of respondents reported that virtual vehicle demonstrations improved their understanding of product features, design specifications, dashboard systems, and interior layouts. Consumers appreciated the convenience of remotely exploring multiple vehicle models without physically visiting dealerships. The study also found that working professionals and urban consumers particularly preferred virtual showroom technologies because they allowed flexible access to product information at any time. The increasing use of virtual reality-based retail systems indicates that digital transformation is changing the traditional automobile buying process and creating new opportunities for customer engagement.

The analysis further reveals that customer satisfaction acts as a critical factor connecting AI adoption with purchase behaviour. Respondents who experienced efficient AI-based services demonstrated higher satisfaction levels and stronger purchase intention compared to consumers relying solely on traditional dealership interactions. Approximately 81% of satisfied consumers expressed willingness to recommend AI-enabled dealerships to other buyers. Consumers particularly valued quick response systems, transparent pricing information, digital financing support, and customized communication. The study indicates that AI technologies improve service quality by reducing waiting time, increasing information accuracy, and enhancing communication efficiency. As a result, higher customer satisfaction directly contributes to stronger purchase behaviour and dealership loyalty.

The findings also show that consumer trust significantly affects the acceptance of AI-enabled automobile retail services. Nearly 73% of respondents stated that they trusted AI-generated recommendations when dealership platforms provided transparent pricing details, verified customer reviews, and secure financial information systems. However, around 38% of respondents expressed moderate concern regarding privacy and data security issues associated with AI technologies. Consumers were particularly cautious about sharing personal financial information, loan eligibility data, and contact details on digital dealership platforms. The study indicates that although consumers appreciate the convenience of AI systems, trust remains an essential condition for technology acceptance. Automobile retailers must therefore strengthen cybersecurity systems and maintain transparency regarding customer data usage.

The study further found that urban consumers demonstrated significantly higher AI adoption levels compared to consumers from semi-urban regions. Respondents from Noida and Ghaziabad reported the highest AI usage levels at approximately 82% and 80% respectively, while Gorakhpur and Prayagraj recorded lower AI adoption levels near 60%. This variation suggests that infrastructure development,

internet accessibility, income level, and digital literacy strongly influence consumer interaction with AI-enabled automobile retail systems. Consumers from highly urbanized cities were more likely to use online vehicle comparison platforms, AI chatbots, digital finance calculators, and virtual test-drive systems during the purchasing process. In contrast, respondents from semi-urban areas continued to rely more heavily on direct communication with dealership executives.

The findings of regression analysis demonstrate that Artificial Intelligence adoption significantly influences consumer purchase behaviour. The regression model explained approximately 78.7% variation in purchase behaviour, indicating that AI-related variables play a major role in shaping automobile buying decisions. Among all independent variables, customer satisfaction recorded the strongest impact on purchase behaviour with the highest beta coefficient value. This finding indicates that consumers are more likely to purchase vehicles when AI-enabled services improve their overall retail experience. Personalized recommendations and consumer trust also showed statistically significant positive effects on purchasing decisions, confirming that AI-driven customer engagement strategies directly affect consumer attitudes and buying intentions.

Another significant finding of the study is related to the behavioural impact of AI-assisted financing services. Approximately 72% of respondents reported that AI-based EMI calculators, online loan comparison systems, and instant finance eligibility tools positively influenced their vehicle purchase planning. Consumers appreciated the ability to compare financing options quickly and receive customized payment plans according to income level and repayment capacity. The availability of AI-supported financial assistance reduced uncertainty regarding vehicle affordability and encouraged faster purchase decisions. This finding highlights the growing importance of financial technology integration within automobile retailing systems.

The study also identified differences in AI acceptance among different age groups. Younger respondents showed stronger positive attitudes toward AI-enabled automobile retail services because they were more familiar with digital technologies and online shopping behaviour. Older consumers above the age of 45 demonstrated comparatively lower AI acceptance because they preferred direct human interaction during the vehicle purchasing process. Nevertheless, even among older respondents, the use of digital finance tools and online product information platforms showed gradual growth. This suggests that AI adoption in automobile retailing is expanding across all age categories, although the degree of technological acceptance varies among demographic groups.

The findings further reveal that AI-enabled automobile retailing positively affects consumer confidence and decision-making efficiency. Consumers who interacted with AI systems reported lower confusion levels, faster product evaluation, and better understanding of vehicle specifications. Approximately 76% of respondents stated that AI technologies improved their confidence in selecting appropriate vehicle models. AI-supported comparison systems allowed consumers to evaluate price, mileage, engine performance, safety ratings, and financing options more effectively. This indicates that AI technologies reduce information asymmetry between consumers and dealerships, thereby improving decision quality.

The mediation analysis results confirmed that customer satisfaction partially mediates the relationship between AI adoption and consumer purchase behaviour. This finding suggests that AI technologies influence purchasing decisions both directly and indirectly. AI systems directly affect purchase intention by improving convenience and personalization, while indirectly influencing purchase behaviour through

enhanced customer satisfaction. Consumers who experienced positive interactions with AI-enabled dealership services developed stronger emotional attachment toward dealership brands and demonstrated higher purchase commitment.

6. Conclusion

The present study concludes that Artificial Intelligence adoption has significantly transformed automobile retailing practices and consumer purchase behaviour in Uttar Pradesh. The integration of AI-enabled technologies such as personalized recommendation systems, virtual showrooms, AI chatbots, predictive analytics, online financing tools, and automated customer support services has created a more efficient, customer-centric, and digitally connected automobile retail environment. The findings clearly indicate that consumers increasingly depend on AI-assisted retail platforms during various stages of the vehicle purchasing process, including information search, vehicle comparison, financing analysis, product evaluation, and final purchase decision-making.

The study revealed that approximately 78% of respondents preferred AI-based personalized recommendation systems because these technologies simplified vehicle selection according to budget, mileage expectations, safety features, and brand preference. Similarly, around 74% of consumers positively responded toward virtual showroom technologies, indicating that digital visualization systems improved product understanding and reduced the need for repeated physical dealership visits. AI-powered chatbots and automated customer service systems were also found effective in improving communication efficiency and reducing response time during customer interactions. These findings demonstrate that AI technologies are reshaping traditional automobile retailing models by enhancing convenience, accessibility, and personalization.

The empirical analysis further confirmed that customer satisfaction plays a major role in strengthening consumer purchase behaviour. The SPSS regression analysis showed that customer satisfaction recorded the highest beta coefficient value of 0.401, indicating that satisfied consumers are more likely to make positive purchase decisions and recommend dealerships to others. Approximately 81% of respondents who experienced efficient AI-enabled dealership services expressed higher confidence in vehicle purchasing decisions. This finding suggests that AI adoption not only improves operational efficiency but also creates stronger emotional engagement between consumers and automobile retailers.

The correlation analysis also revealed a strong positive relationship between AI adoption and consumer purchase behaviour with a correlation coefficient value of 0.804. This indicates that consumers who actively use AI-enabled services demonstrate higher purchase intention, stronger product evaluation capability, and improved decision-making confidence. The regression model further explained approximately 78.7% variation in consumer purchase behaviour, confirming that AI-enabled services significantly influence automobile purchasing decisions in Uttar Pradesh.

The study also concludes that consumer trust remains a critical factor influencing the effectiveness of AI-enabled automobile retail systems. Around 73% of respondents trusted AI-generated recommendations when dealership platforms provided transparent pricing information, customer reviews, and secure digital systems. However, approximately 38% of consumers expressed concerns regarding data privacy and misuse of personal financial information. Therefore, automobile retailers must strengthen data security

mechanisms, maintain transparency in AI-generated recommendations, and provide ethical digital practices to improve consumer trust and long-term technology acceptance.

Another important conclusion of the study is that AI adoption levels vary across different cities and demographic groups within Uttar Pradesh. Metropolitan regions such as Noida and Ghaziabad recorded the highest AI adoption levels at approximately 82% and 80% respectively due to higher digital literacy, stronger internet infrastructure, and greater exposure to technology-based retail environments. In contrast, semi-urban regions demonstrated comparatively lower AI adoption levels because many consumers still preferred direct interaction with dealership representatives. Similarly, younger consumers between 26 and 35 years of age showed greater acceptance of AI-enabled automobile retail services compared to older age groups. This indicates that demographic and regional factors significantly influence digital retail adoption patterns.

The findings further demonstrate that AI-enabled financing systems positively affect automobile purchase planning and affordability analysis. Approximately 72% of respondents reported that AI-based EMI calculators, loan comparison systems, and automated financial assistance tools simplified purchasing decisions by improving financial transparency and reducing uncertainty regarding repayment capacity. This indicates that financial technology integration has become an essential component of modern automobile retailing strategies.

Overall, the study concludes that Artificial Intelligence adoption significantly enhances customer engagement, service quality, purchase intention, and consumer satisfaction in automobile retailing. AI technologies provide automobile dealerships with opportunities to improve operational efficiency, strengthen customer relationships, and gain competitive advantage in an increasingly digital marketplace. The study highlights that automobile retailers in Uttar Pradesh should continue investing in AI-enabled customer engagement systems while maintaining a balance between technological automation and personalized human interaction.

The research contributes significantly to the existing literature on Artificial Intelligence adoption, digital retail transformation, and consumer purchase behaviour in emerging markets. It also provides practical implications for automobile dealerships, policymakers, and technology providers regarding the strategic implementation of AI-based retail systems. The study suggests that future growth in automobile retailing will increasingly depend on intelligent technologies capable of delivering personalized, secure, efficient, and customer-focused experiences.

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