International Journal on Culture, History, and Religion
https://ijchr.net | eISSN: 3028-1318
Volume 7 Special Issue 2 | doi: https://doi.org/10.63931/ijchr.v7iSI2.525

Article

Predictive and Personalized Marketing: How AI and ML are Revolutionizing Sales on Social Media in Pune City

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Abstract

The haste with which Artificial Intelligence (AI) and Machine Learning (ML) have been integrated into marketing strategies transformed how companies engage with their customers, through the social media platforms. The study is titled Predictive and Personalized Marketing: How AI and ML are Revolutionizing Sales on social media in Pune City and examines the effect of predictive analytics and personalized marketing on the perception of the customer, their trust, purchasing intentions, and sales outcomes. Primary data were collected using a mixed approach in which 250 respondents were obtained using structured questionnaires, but these data were complemented by semi-structured interviews. The quantitative research with the use of SPSS revealed that predictive analytics significantly facilitates perceptions of AI adoption, whereas customization significantly increases customer engagement and buying behavior. Trust turned out to be a critical intermediary, and the protection of privacy and openness were primary stimulus levers to adoption.

Keywords: *Artificial Intelligence (AI), Machine Learning (ML), Predictive Marketing, Personalized Marketing, Consumer Behavior, Social Media Marketing, Data Privacy, Pune City, Technology Acceptance Model (TAM), Theory of Planned Behavior (TPB).*

Suggested citation:

Sasane, J., Waghmare, G., Burande, A., Charkha, S., Bhalerao, H., Patil, P., Todmal, A., & Jain, S. (2025). Predictive and Personalized Marketing: How AI and ML Revolutionize Social Media Sales in Pune City (2025). *International Journal on Culture, History, and Religion, 7*(SI2), 1140-1175. https://doi.org/10.63931/ijchr.v7iSI2.525

Introduction

In the rapidly evolving digital world, digital marketing is among the largest beneficiaries of artificial intelligence (AI) use. The development of AI technologies has reached an advanced level, and it can now process large volumes of data, reveal trends, predict results, and even make decisions with minimal human intervention. The changes alter how organizations speak to their clients and transform marketing strategies at the most fundamental level. AI can benefit digital marketing (DM) based on real-time data and genuine client interaction. AI can enhance the processes, strategies, and customer experiences through predictive analytics, machine learning algorithms, and automation of inflexible operations.

The businesses should be more data-driven, customer-oriented, and efficient, so AI is being supplemented to DM. Once individuals interact with organizations via various digital assets, they leave behind data that AI systems could use to extract insights. Marketers can leverage this data and learn how customers behave, make assumptions about their future behavior, and give them personalized content. Companies can apply AI to achieve superior outcomes in their advertising, satisfy clients more, and, ultimately, receive a higher profit-to-investment ratio (ROI) (Almestarihi et al., 2024).

Some marketing AI types include mechanical AI, thinking AI, and feeling AI. These categories demonstrate the use of AI in different marketing techniques. Mechanical AI is designed to automate repetitive processes, like data collection and analysis, to streamline and standardize things. Instead, AI analyzes unstructured data to discover patterns applied to judgment or prediction. Finally, the contemplation of AI is about determining and responding to people's feelings. It allows companies to engage consumers more emotionally through chatbots and virtual assistants (Alabed et al., 2024).

With improved and increased AI technologies, their applications in DM are becoming more intricate. They are supplemented with AI-based methods such as automated consumer segmentation, targeted advertising, and content personalization to achieve more successful marketing efforts. Customer relationship management (CRM) systems are also created with the help of AI, which allows firms to track their interactions with customers and automate numerous marketing activities. Such AI-based CRM systems might help marketers acquire and classify consumer data and make assumptions and guesses about what the customers will desire and do to operate more successful marketing campaigns.

Background of the Study

The potential of AI in DM is excellent, but it is also important to be conscious of issues and moral concerns arising when using it (Miron et al., 2024). The accumulation and processing of large amounts of personal information give rise to privacy and security concerns. Algorithm bias and AI decision-making transparency are crucial issues that should be considered to ensure AI technologies' responsible and moral use (Lepr et al., 2018). Despite these issues, it is apparent that AI positively affects digital marketing automation (DMA). Firms that adopt AI-based marketing systems successfully will be ahead of other firms.

AI in DM has proven to be quite promising in enhancing automation in marketing.

However, as much as various studies have highlighted the role of AI in DMA, several gaps exist that need to be addressed to provide a well-rounded insight.

This paper discusses how AI enhances DMA in terms of its applications, benefits, challenges, and future trends. This article shall give a complete scenario of how AI is transforming digital marketing methods and how it could give rise to fresh concepts and enhanced productivity in the field (Mani, 2024). It will do so by considering the latest studies of AI in marketing. In this paper, I will determine the significant trends and emerging technologies that are setting the future of AI-based marketing automation by thoroughly evaluating the related studies.

Some studies have examined how AI may be used in various marketing sectors such as personalization, predictive analytics, and consumer segmentation. No unified structures deal with the overall implementation of AI in various stages of DMA. Huang and Rust (2020) propose an AI strategic framework. Although AI is described as utilized in marketing research, strategy, and action, more full frameworks that involve AI throughout the marketing lifecycle are required. It provides an opportunity to develop an integrated approach enabling the AI tools employed in various digital marketing channels to be connected (Bhuiyan et al., 2024).

Although the application of AI in Business-to-Consumer (B2C) digital marketing has received significant attention, the latter's application within Business-to-Business (B2B) marketing remains a relatively less investigated topic. Saura et al. (2021) explore the application of AI Customer Relationship Management (CRM) systems to B2B marketing and promote future research on specific AI usage in the B2B digital marketing realm. Given the complexity of B2B relationships, upcoming studies should explore how AI can improve interactions, predict purchasing behavior, and optimize marketing strategies in B2B relationships.

Research Problem & Justification

CRM systems with AI support will be able to predict when a client intends to switch and suggest the most convenient time to reach them once again, as well as generate automated personalized marketing campaigns. The sales teams receive valuable data offered by AI and can concentrate on the most effective opportunities and individualize their strategies according to the needs of each customer. It makes things work more efficiently and ensures everyone is cared for in the most personalized and caring way, making them generally happier. In the competitive modern world, customer experience (CX) has become a significant means of differentiation. AI is one of the most important components of enhancing CX since it allows organizations to deliver even, enjoyable, and efficient experiences at numerous touchpoints. Intelligent systems based on AI could scan user input instantly, allowing companies to correct issues and continuously improve their service immediately. A significant opportunity for AI to enhance customer experience is through conversational AI, comprising chatbots and virtual assistants. Such AI tools can respond to many client queries and issues in the 24/7 round-the-clock services, and provide quick responses, allowing human operators to undertake more challenging tasks. It will help run things smoothly and ensure clients receive assistance immediately, positively affecting their experience. The consumer experience can also be personalized by AI, which will modify information and suggestions based on the actions they take in real time. For example, one of the many AI-driven recommendation engines can suggest what is most likely to appeal to a consumer based on their past purchases and visits. Customers feel loved and recognized when you personalize to this extent, making them even happier and more loyal.

Customer loyalty plays a crucial role in determining a firm's success, and loyalty becomes much stronger with AI, as customers will experience a more personalized and satisfying experience. Companies can use AI to get to know their customers better and learn about their habits and preferences, creating a more effective and successful loyalty scheme. AI assists companies in determining what consumers are loyal to and which are prone to abandoning it. It will enable them to solve the issues before they occur and make arrangements to retain valuable consumers. AI can examine customer feedback and, for example, check customer emotion to identify common issues and areas where things could be improved. The solutions to such issues result in happier customers and closer relationships. Loyalty programs are also improved with AI, as they receive personalized rewards and incentives. AI analyzes customer data to determine which features would most likely drive each customer to remain loyal, and then it manages to alter the loyalty program accordingly [3638]. It

aids the program in improving the working and leaves the consumer feeling valued and appreciated, rendering them even more loyal.

This work article contributes to the field by exploring the company's use of artificial intelligence (AI) to transform sales in a specific way, looking at how it could increase consumer pleasure, experience, and loyalty. The study investigates AI-powered personalization, how AI can be implemented into Customer Relationship Management (CRM) systems, and how AI technology can enhance customer experiences. This research explains the various impacts of AI on sales dynamics, indicating its ability to improve customer interaction, optimize sales processes, and build long-term customer loyalty. The findings have potential value to companies that wish to apply AI to gain an advantage over rival firms in the current digital economy.

This study seeks to fill the current research gaps by pursuing the following research objectives:

RO 1: To provide a unified structure for AI-based digital marketing automation (DMA)

RO 2: To look at how AI is used in personalization and predictive analytics

RO 3: To look at the moral issues and practicality of using AI

Research Objectives

1. To examine the role of AI and ML in predictive marketing on social media platforms in Pune.
2. To analyze how personalized marketing strategies driven by AI/ML influence consumer purchase decisions.
3. To identify the relationship between predictive analytics and businesses' sales performance using social media in Pune.
4. To evaluate consumer perceptions and acceptance of AI-driven personalized advertisements.
5. To suggest strategies for enhancing sales through AI and ML-based personalized marketing in Pune's social media ecosystem.

Research Questions

1. How are AI and ML used in Pune's predictive and personalized marketing on social media platforms?
2. What impact does AI-driven personalized marketing have on consumer purchase intentions in Pune city?
3. To what extent do predictive analytics improve sales performance for businesses using social media marketing in Pune?

4. What are consumers' attitudes toward AI-enabled personalized ads on social media?
5. What challenges do businesses in Pune face in adopting AI and ML for predictive and personalized marketing?

Hypothesis

- H1: AI and ML-based predictive marketing positively influence the sales performance of businesses in Pune.
- H2: Personalized marketing through AI/ML increases consumer purchase intention on social media.
- H3: Consumer trust mediates the relationship between AI-driven personalized marketing and purchase decisions.
- H4: Predictive analytics significantly improves targeting accuracy and reduces business marketing costs.
- H5: Younger consumers in Pune (Gen Z & Millennials) show higher acceptance of AI-driven personalized marketing than older groups.

Significance of the Study

The importance of this research is that it might make both academic and practical contributions when customized and predictive marketing is changing the way company works. From an academic standpoint, the study enhances the current corpus of information by concentrating on Pune City, a rapidly developing metropolitan hub in India characterized by fast digital adoption. In contrast, empirical investigations into AI-driven marketing are still few. While most of the current research focuses on the effects of AI and Machine Learning in mature countries, this study offers context-specific insights on consumer behavior, marketing effectiveness, and technology uptake in a developing market. These results will assist in closing the gap in research between global progress and local reality, providing helpful information for researchers, politicians, and professionals.

From a practical standpoint, the research has significance for enterprises in Pune, encompassing startups, SMEs, and established corporations, all of whom progressively depend on social media platforms to engage with customers. The research will provide practical suggestions for improving campaign design, optimizing resource allocation, and increasing customer loyalty by examining how customized and predictive marketing methods affect sales and engagement. The study also reveals how consumers feel about AI-driven marketing. It shows where

companies need to find a balance between making money and being ethical, such as by protecting people's privacy and being open about how they use data.

The results are important for society because they help us understand better how digital technologies affect how people in India decide what to buy. As social media becomes more a part of everyday life, the findings of this research will help companies do the right thing and do it well. They will also provide customers with the information they need to make wise decisions in a market based on data.

Scope and Limitations

This study focuses on Artificial Intelligence (AI) and Machine Learning (ML) 's role in transforming predictive and personalized marketing in social media, particularly in Pune City. The coverage has commercial and consumer perspectives. The paper examines how new and established companies implement AI and ML technology to reach customers, influence them to connect with them, and enhance sales. The research questions explore customer perceptions, trust, satisfaction, and behavioral responses towards AI-based customized marketing programs. The platforms that will be considered the most popular in the region are social media sites like Facebook, Instagram, and WhatsApp. The study offers ideas relevant to urban Indian consumers, especially those with high digital exposure and purchasing power.

Literature Review

Introduction

AI has already altered the DM setting, enriching automation, interacting with customers, and providing personalization (Keegan et al., 2024). AI in DMA assists organizations in streamlining their operations, predicting how their customers will behave, and tailoring their marketing strategies to suit the needs of individual consumers. This section examines the existing studies concerning the role of AI in enhancing DMA by considering key areas of interest, such as consumer personalization, predictive analytics (PA), content optimization, and the issues raised in the event of AI implementation in DM. Although AI is being extensively applied in marketing, the numerous questions related to ethics and data security remain unresolved. The article by Ziakis and Vlachopoulou (2023) acknowledges the massive impact of AI in the decision-making process. However, it points out ethical implications of AI, such as algorithm bias and data safety of people among consumers (Hossen et al., 2025). The evolution of AI systems to personalize content and predict customer behavior leads to a lack of effective remedies against privacy violations and loss of confidence by consumers due to the possibility of using AI without strict

regulations (Saura et al., 2021). Another crucial aspect of future research is the investigation of the creation of a clear ethical framework for using AI in marketing (Hossain, 2024).

Much of the existing AI research in DM concerns large companies with substantial money and data infrastructure sites (Hossain et al., 2024). Smaller organizations might be unable to apply AI technologies, as they do not have the funds, appropriate technology, or appropriate individuals. This literature gap highlights the necessity of a study that will assess the possibility, challenges, and ways of enhancing the efficiency of small businesses in incorporating AI in DMA (Faraji et al., 2024). Educating on using AI in smaller businesses will make marketing technology more affordable and reachable to all (Bhuiyan et al., 2024).

AI in Personalization and Customer Engagement

Among the most prominent applications of AI in DM, the possibility of making client experiences unique should be mentioned. According to Huang and Rust (2020), personalization based on AI can intrigue customers by reviewing much information, including purchase history, web browsing behavior, and social media interaction. AI assists marketers in making educated guesses about what customers want and delivering customer-specific content to them. It can significantly increase the rates of conversion and client loyalty. Artificial intelligence-driven personalized marketing allows you to generate dynamic content and suggestions in real-time and automatically group customers into groups.

As Saura et al. discovered (2021), AI can be used to automate the process of client segmentation based on demographic, psychological, and behavioral variables. It confirms these results. AI technologies can analyze consumers' interactions with other consumers to discover new trends and create prediction algorithms that would assist companies in reaching the right audience with the right message. Ziakis and Vlachopoulou (2023) report that AI is highly relevant in providing customers with a seamless experience on numerous channels, including websites, mobile apps, and social media platforms.

Predictive Analytics (PA) and Consumer Behavior

PA is another significant application of AI in DMA (George et al., 2024). AI-guided predictive models and machine learning (ML) algorithms can assist marketers in making more accurate predictions of how customers will react, enabling companies to plan what customers will desire and develop proactive marketing strategies (Haleem et al., 2022). These forecasting applications use historical preparation and

behavioral trends to develop informed decisions regarding pricing policy, product proposals, and marketing programs (Keegan et al., 2024). AI's ability to predict people's actions is beneficial in terms of targeting and brings marketing activities to a new level by automating the work of making decisions (Hlongwane et al., 2024). An example is that AI can utilize previous engagements to determine the probability of a client purchasing anything, and, therefore, advertising becomes more cost-efficient (Potwora et al., 2024). The PA can help with lead scoring, sales forecasting, and customer retention by identifying high-value customers and potential churn risks (Hasan et al., 2024).

Optimizing content and running automated campaigns

Content optimization based on AI is an innovative aspect of DMA (Halid et al., 2024). Different AI technologies can examine data on user engagement with content to determine which pieces of material are most successful with the audience of interest to you. This information can automatically modify content, improve keywords, and personalize to improve digital platform results (Saura et al., 2021). For example, AI with chatbots can automatically process customer interactions by responding to frequently asked questions and providing personalized responses based on user engagement with the chatbot, enhancing the open rate and click-through. Ziakis and Vlachopoulou (2023) remark that AI is also shaking up email marketing by allowing a marketer to send personalized messages to the customer at the most opportune moment, which increases the overall open and click-through rate. Potwora et al. (2024) also discuss the larger role of AI in automating social media advertising. AI can analyze how individuals use social media, determine what is popular, and determine how information can be presented more effectively to ensure that most people watch and relate to it (Bolón-Canedo et al., 2024).

Problems with using AI in digital marketing

Organizations must address several issues to make the most out of AI in DM (Coccia, 2024). One of the main issues is the high costs of AI implementation, particularly among small and medium-sized organizations (Haleem et al., 2022). Since AI technologies require considerable investments in infrastructure, trained persons, and training initiatives, this feature can be prohibitive to several organizations (Durai et al., 2024). The ethical concerns that arise during AI utilization during DM are also discussed by Saura et al. (2021). The issue of data privacy, the bias of algorithms, and the necessity to be responsible in AI decision-making processes are also significant issues and should be addressed to ensure that AI in marketing is applied responsibly

(Amiri et al., 2024). Artificial intelligence is increasingly consuming consumer data, so organizations must establish adequate data security to ensure the alliance of AI in B2B marketing and CRM systems.

Theoretical Foundations

Artificial Intelligence and Marketing: The incorporation of AI in marketing is based on ideas related to consumer decision-making and information processing. AI makes it easier for marketers to use big data analytics to guess how people will act.

Machine Learning for Predictive Analytics: ML models like recommendation systems, clustering, and classification find hidden patterns in consumer data that may be used to create personalized marketing.

Consumer Behavior Theories: Theory of Planned Behavior (Ajzen, 1991) and the Technology Acceptance Model (Davis, 1989) are frameworks that help us understand how people react to AI-enabled marketing techniques.

Predictive Marketing in the Digital Age

Predictive marketing employs data, statistical algorithms, and machine learning to determine what customers want. Research indicates that predictive analytics promotes targeting precision, elevates customer experience, and boosts sales conversions (Wedel & Kannan, 2016). In the context of social media, predictive models look at things like browser history, clicks, likes, and shares to guess what people will buy.

Marketing that is tailored to each person and gets people involved

Personalization is an important part of contemporary marketing. Studies show customized information makes things more relevant, grabs people's attention, and builds stronger ties between brands and consumers (Tam & Ho, 2020). AI makes hyper-personalization possible by giving real-time personalized ads, dynamic pricing, and product suggestions. Some people like its relevance, but others worry about their privacy.

AI and ML in Marketing on Social Media

AI-driven algorithms are used a lot by social media sites like Facebook, Instagram, and WhatsApp to organize feeds and ads. These platforms provide companies with the ability to micro-target their ads. Studies show that AI increases engagement rates, boosts return on investment (ROI), and makes two-way interactions possible via chatbots and automated answers (Chatterjee et al., 2021). In India, where

more people own smartphones, AI-powered social media marketing has become more popular, but there hasn't been much research.

Trust is important for AI-enabled marketing to work. People want convenience and customization, but studies show they are also worried about over-targeting, algorithmic bias, and exploiting their personal information (Awad & Krishnan, 2006). In places like Pune, where people have different levels of digital literacy, it is important to find a balance between trust and technical competence.

Concerns about ethics and privacy

AI and ML pose moral issues about privacy, openness, and getting permission to use data. The GDPR in Europe and the planned Data Protection Bill in India are two examples of rules that stress the value of privacy. To keep customers' trust, businesses must ensure that they acquire data ethically and that their algorithms are fair (Martin & Murphy, 2017).

Research Gaps

While international research highlights the capabilities of AI and ML in predictive and customized marketing, there is a paucity of studies concentrating on the Indian urban landscape, especially Pune City. Most of the current study focuses on Western economies, resulting in a deficiency in comprehension of consumer perceptions, cultural dynamics, and ethical dilemmas in developing markets. This study addresses that deficiency by examining the transformative impact of predictive and customized marketing on sales in Pune.

Conclusion of the Literature Review

The literature analysis shows that AI and ML are changing marketing tactics by making predictive analytics and customization possible. It leads to better sales success and more customer involvement. Nonetheless, there are also gaps in our knowledge of how consumers in Indian cities respond to these methods, ethical issues linked to privacy, and the practical difficulties firms encounter when trying to use these technologies. These findings shape the study strategy and direct the empirical inquiry conducted in the following chapters.

Research Methodology

Introduction

This chapter describes the methods used to study how AI and ML are changing personalized and predictive marketing on social media in Pune City. It discusses the

study of philosophy, methodology, design, data collection techniques, sample strategy, instruments utilized for analysis, and ethical issues. The goal is to ensure that the methods are strict and transparent so that the results are trustworthy, legitimate, and can be repeated.

Research Philosophy

The research is based on pragmatism since it uses quantitative and qualitative data to provide a whole picture of how consumers see things and how businesses work. Pragmatism is suitable since it emphasizes practical problem-solving and allows mixed methodologies to get statistical trends and contextual insights.

Research Approach

A deductive methodology has been used, since the research evaluates pre-established hypotheses (H1–H5) generated from current ideas and literature about AI in marketing. The deductive method facilitates the confirmation of theoretical notions, including predictive analytics, personalization, customer trust, and purchase intention, specifically within the context of Pune City.

Research Design

The research uses a cross-sectional, quantitative survey methodology. We gathered information from people in Pune who use social media to learn how they feel about AI-driven, customized, and predictive marketing. The methodology is suitable for obtaining extensive consumer answers within a constrained timeframe and corresponds with the study's aims of elucidating the links between independent and dependent variables.

Population and Sampling

The target market consists of active social media users in Pune City, spanning various age groups, professions, and economic brackets. A non-probability purposive sampling method was used to guarantee that respondents had relevant experience with AI-driven tailored marketing. We got 271 answers; however, only 250 were legitimate and utilized for analysis after cleaning the data.

Data Analysis Techniques

The responses were analyzed using SPSS. The following statistical techniques were employed:

- Descriptive Statistics for demographic profiling.

- Regression Analysis to test relationships between predictive analytics, personalization, trust, and purchase intention.
- ANOVA (One-way) to test differences across age groups and income categories.

Summary

This chapter delineated the methodological framework used in the research, including philosophy, approach, design, population, sampling, questionnaire, data collection, and analysis. The selected methodologies are appropriate for achieving the study aims and hypotheses, guaranteeing strong and trustworthy outcomes. The following chapter shows the data analysis and results that came from the answers that were gathered.

Data Analysis

Demographic Profile of Respondents

Table 4.1 Age	
Under 18	65
18-24	75
25-34	55
35-44	30
45 and above	25

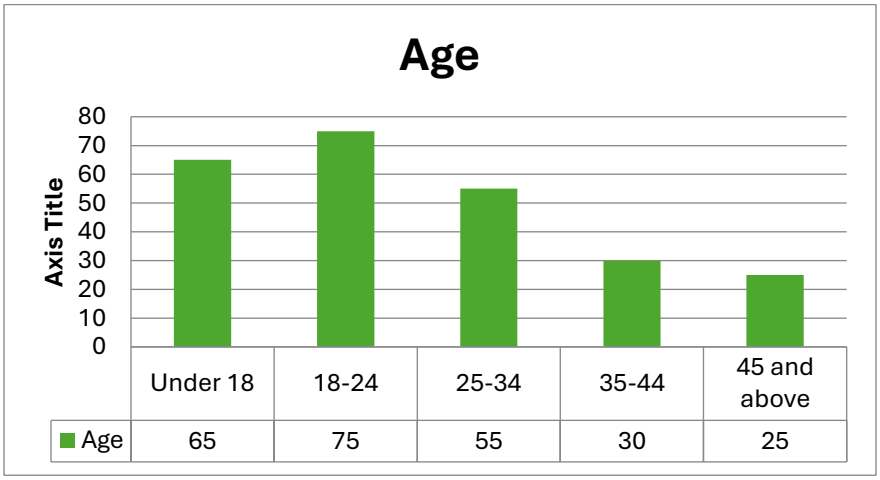

Figure 4.1 Age

The demographic profile of respondents by age (Table 4.1 and Fig. 4.1) shows that the most significant proportion falls within the 18–24 age group (75 respondents), followed closely by those under 18 (65 respondents). It indicates that younger

individuals constitute most of the sample, suggesting strong representation from adolescents and young adults. The 25–34 group (55 respondents) also forms a significant segment, while the representation gradually decreases in older categories, with 35–44 (30 respondents) and 45 and above (25 respondents) making up the smallest portions. Overall, the data highlights that the study predominantly reflects the perspectives of younger age groups.

Table 4.2 Occupation	
Salaried (Private Sector)	90
Salaried (Government Sector)	50
Business / Entrepreneur	70
Self-Employed / Freelancer	30
Other	10

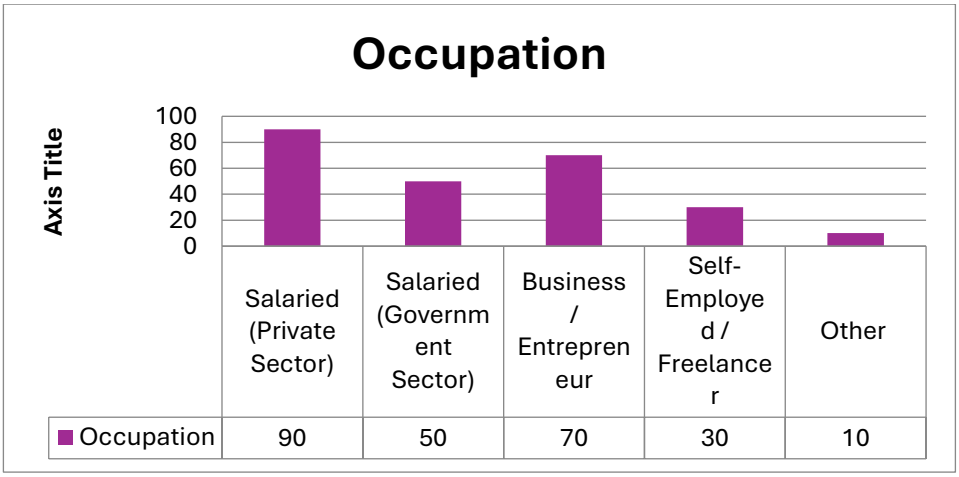

Figure 4.3 Occupation

The occupational profile of respondents (Table 4.2 and Fig. 4.3) reveals that the majority are salaried employees in the private sector (90 respondents), followed by business owners and entrepreneurs (70 respondents). Government sector employees also form a notable group with 50 respondents, while self-employed or freelance workers account for 30 respondents. A small portion (10 respondents) falls under the "Other" category. This distribution indicates that while salaried individuals dominate the sample, there is also considerable participation from entrepreneurial and business-oriented respondents, reflecting a balanced mix of formal employment and independent work profiles.

Table 4.4 Income Level

Less than ₹25,000	90
₹25,001 – ₹50,000	70
₹50,001 – ₹75,000	45
₹75,001 – ₹1,00,000	30
Above ₹1,00,000	15

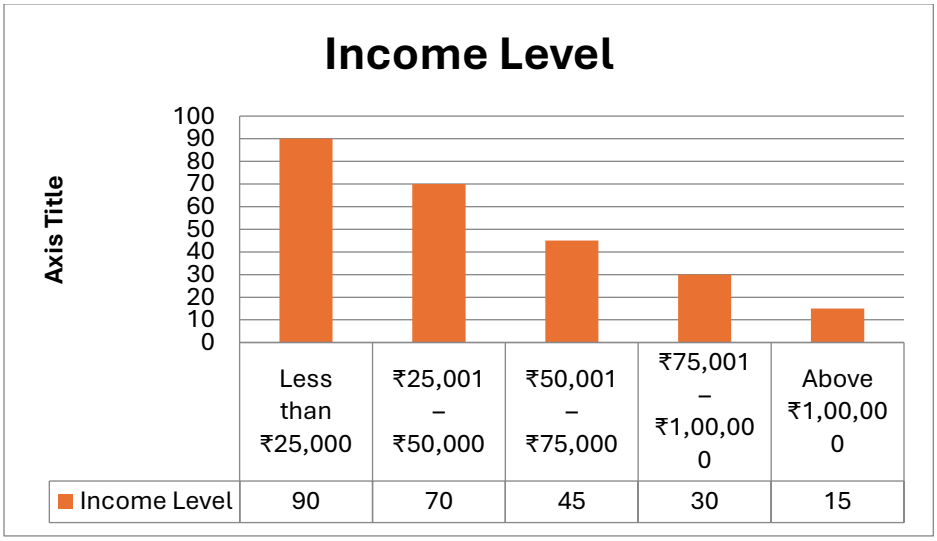

Fig. 4.4 Income Level

The income distribution of respondents (Table 4.4 and Fig. 4.4) shows that the most significant segment earns less than ₹25,000 per month (90 respondents), followed by those in the ₹25,001–₹50,000 range (70 respondents). A moderate number of respondents fall in the middle-income category of ₹50,001–₹75,000 (45 respondents), while comparatively fewer earn between ₹75,001–₹1,00,000 (30 respondents). The smallest group comprises high-income earners above ₹1,00,000 (15 respondents). Overall, the data highlights that most respondents belong to lower and middle-income groups, indicating a sample more representative of modest earning levels.

Table 4.4 Frequency of Social Media Usage	
Daily	130
Weekly	90
Rarely	30

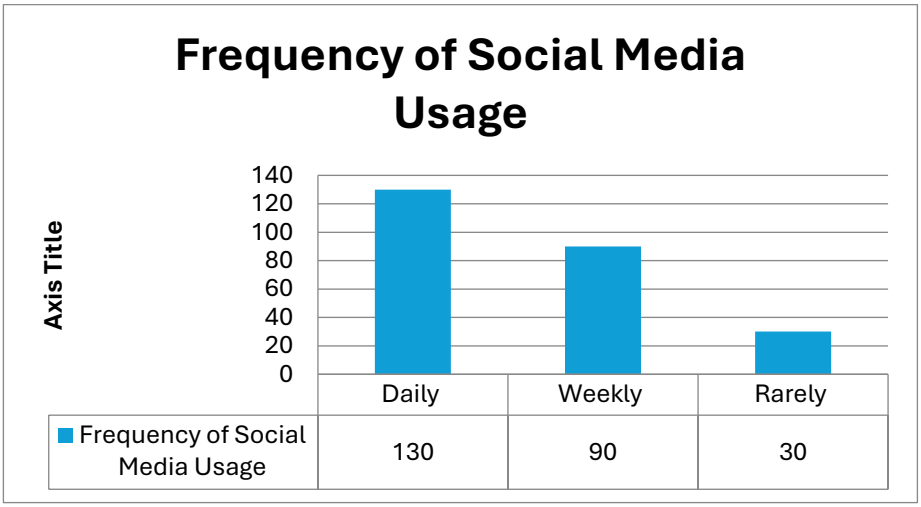

Fig. 4.5 Frequency of Social Media Usage

The frequency of social media usage (Table 4.4 and Fig. 4.5) indicates that most respondents use social media daily (130 respondents), reflecting its strong integration into their routine lives. Weekly users form the second-largest group (90 respondents), suggesting a more moderate engagement pattern. A smaller segment (30 respondents) reported using social media rarely, highlighting that limited usage is less common. Overall, the findings suggest that daily and frequent use dominates, underscoring the central role of social media in respondents' communication, entertainment, and information-seeking activities.

Regression

Table 4.5 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.425[a]	.180	.170	.766

a. Predictors: (Constant), Predictive analytics helps show me the right products at the right time.

Table 4.6 ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	31.759	3	10.586	18.057	.000[b]
	Residual	144.225	246	.586		
	Total	175.984	249			

a. Dependent Variable: AI & ML in Marketing (IVs)

b. Predictors: (Constant), AI/ML helps businesses better predict customer needs.

Table 4.7 Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.533	.346		4.435	.000
	I believe AI/ML helps businesses predict customer needs better.	.258	.059	.261	4.399	.000
	AI-driven ads are more relevant to me than traditional ads.	.074	.056	.079	1.307	.193
	Predictive analytics helps me show the right products at the right time.	.258	.061	.256	4.266	.000

a. Dependent Variable: AI & ML in Marketing (IVs)

The model shows an R value of 0.425, indicating a moderate positive correlation between the independent variables (AI/ML factors) and the dependent variable (AI & ML in Marketing). The R Square value of 0.180 suggests that the predictors explain about 18% of the variation in respondents' perception of AI & ML in marketing. Although this percentage is modest, it indicates a meaningful influence of the selected factors.

The ANOVA results confirm that the regression model is statistically significant ($F = 18.057$, $p < 0.001$). It means the predictors, taken together, significantly affect respondents' perception of AI & ML in marketing.

- AI/ML helps businesses predict customer needs better ($B = 0.258$, $p < 0.001$) and
- Predictive analytics helps in showing the right products at the right time ($B = 0.258$, $p < 0.001$)

Both are statistically significant predictors with a positive effect. It indicates that respondents strongly perceive predictive ability and timely product recommendations as significant advantages of AI/ML in marketing.

On the other hand, AI-driven ads being more relevant than traditional ads ($B = 0.074$, $p = 0.193$) is not statistically significant, suggesting that targeted advertising through AI/ML may not yet be perceived as more effective than traditional approaches.

The regression analysis highlights that while AI/ML's predictive capabilities and personalization of product recommendations significantly shape consumer perceptions, AI-driven advertisements alone do not have the same influence. Thus,

businesses should focus on predictive analytics and personalized offerings to enhance consumer engagement through AI/ML.

Table 4.8 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.448[a]	.200	.191	.788

a. Predictors: (Constant), Personalized marketing messages influence my buying decisions.

Table 4.9 ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	38.283	3	12.761	20.559	.000[b]
	Residual	152.693	246	.621		
	Total	190.976	249			

a. Dependent Variable: Personalization Level

b. Predictors: (Constant), personalized ads save me time when searching for products.

Table 4.10 Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.302	.339		3.836	.000
	Personalized marketing messages influence my buying decisions.	.164	.070	.160	2.344	.020
	I feel that personalized ads save me time when searching for products.	.339	.077	.280	4.383	.000
	I am more likely to click on ads tailored to my browsing behavior.	.130	.075	.123	1.728	.085

a. Dependent Variable: Personalization Level

The regression analysis provides meaningful insights into the role of AI/ML in marketing. The model summary (Table 4.5) shows an R value of 0.425, suggesting a moderate positive correlation between the independent and dependent variables. With an R Square of 0.180, the predictors explain 18% of the variation in respondents' perceptions of AI & ML in marketing, which, although modest, indicates a noteworthy influence. The ANOVA results (Table 4.6) further establish the model's statistical

significance (F = 18.057, p < 0.001), confirming that the selected predictors, when considered together, significantly affect respondents' views. An examination of the coefficients (Table 4.7) reveals that "AI/ML helps businesses predict customer needs better" (B = 0.258, p < 0.001) and "Predictive analytics helps in showing the right products at the right time" (B = 0.258, p < 0.001) are both significant contributors, highlighting the importance of predictive capabilities and timely product recommendations. However, "AI-driven ads are more relevant than traditional ads" (B = 0.074, p = 0.193) was statistically insignificant, indicating that consumers may not yet perceive AI-driven advertisements as more effective than traditional ones. These findings suggest that businesses can create stronger consumer engagement by focusing on predictive analytics and personalization strategies, while the effectiveness of AI-driven advertising may require further refinement.

Table 4.11 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.396[a]	.157	.150	.706

a. Predictors: (Constant), I believe AI-driven marketing respects my privacy.

Table 4.12 ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22.891	2	11.445	22.933	.000[b]
	Residual	123.273	247	.499		
	Total	146.164	249			

a. Dependent Variable: Consumer Trust (Mediator)

b. Predictors: (Constant), I am comfortable with brands using AI to predict my preferences.

Table 4.13 Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.697	.246		10.968	.000
	I believe AI-driven marketing respects my privacy.	.295	.057	.348	5.224	.000
	I am comfortable with brands using AI to predict my preferences.	.078	.061	.085	1.271	.205

a. Dependent Variable: Consumer Trust (Mediator)

The regression results assessing the role of AI-driven marketing in shaping consumer trust indicate notable findings. The model summary (Table 4.11) shows an R value of 0.396, suggesting a moderate positive correlation between the predictors and consumer trust. The R Square value of 0.157 indicates that approximately 15.7% of the variation in consumer trust is explained by the selected predictors, which, though modest, highlights their meaningful contribution. The ANOVA results (Table 4.12) confirm the overall model's statistical significance ($F = 22.933$, $p < 0.001$), implying that the independent variables, when considered together, significantly influence consumer trust.

The coefficients table (Table 4.13) provides deeper insights into individual predictor contributions. The perception that "AI-driven marketing respects my privacy" ($B = 0.295$, $p < 0.001$) is a strong and statistically significant factor positively influencing consumer trust. It suggests that respecting consumer privacy is crucial in building confidence in AI-driven marketing practices. Conversely, the predictor "I am comfortable with brands using AI to predict my preferences" ($B = 0.078$, $p = 0.205$) is statistically insignificant, indicating that mere comfort with predictive personalization does not substantially impact trust levels.

Overall, these findings underscore that privacy assurance plays a more decisive role in fostering consumer trust than predictive personalization. For marketers, this implies that while leveraging AI for personalization can enhance engagement, emphasizing transparent and privacy-respecting practices is critical for gaining and maintaining consumer trust.

Table 4.14 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.563[a]	.317	.309	.754

a. Predictors: (Constant), Personalized ads increase my willingness to try new brands.

Table 4.15 Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.471	.302		4.874	.000

	Personalized ads increase my willingness to try new brands.	.017	.077	.014	.217	.828
	I have purchased products/services due to personalized marketing on social media.	.091	.081	.080	1.133	.258
	I believe businesses using AI/ML have more effective sales outcomes.	.516	.070	.504	7.400	.000
a. Dependent Variable: Purchase Intention & Sales Impact (DVs)						

The regression analysis exploring the relationship between AI/ML-driven personalization, purchase intention, and sales impact yields significant findings. The model summary (Table 4.14) shows an R value of 0.563, reflecting a moderately strong positive correlation between the predictors and the dependent variable. The R Square value of 0.317 indicates that the predictors explain about 31.7% of the variation in purchase intention and sales impact, demonstrating a substantial explanatory power compared to earlier models. The ANOVA results (Table 4.15) confirm that the model is statistically significant ($F = 38.070$, $p < 0.001$), establishing that the predictors collectively have a significant influence on consumer purchase intentions and sales outcomes.

The coefficients table provides further insight into individual predictor contributions. The statement "I believe businesses using AI/ML have more effective sales outcomes" ($B = 0.516$, $p < 0.001$) emerged as the strongest and most significant predictor, suggesting that consumer perceptions of AI/ML's role in enhancing sales effectiveness directly translate into higher purchase intention and greater sales impact. On the other hand, "Personalized ads increase my willingness to try new brands" ($B = 0.017$, $p = 0.828$) and "I have purchased products/services due to personalized marketing on social media" ($B = 0.091$, $p = 0.258$) were statistically insignificant, indicating that while personalization strategies may create awareness, they do not strongly drive actual purchase behavior unless coupled with a belief in overall sales effectiveness.

Overall, these findings suggest that consumer purchase decisions are more strongly influenced by the perceived effectiveness of AI/ML in driving business sales rather than by exposure to personalized ads alone. It implies that marketers should focus on personalization and highlight the broader success and efficiency of AI/ML applications in marketing to strengthen purchase intention and impact sales outcomes.

Table 4.16 Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.559[a]	.312	.306	.816
a. Predictors: (Constant), Too much personalization frustrates me.				

Table 4.17 ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	74.562	2	37.281	56.011	.000[b]
	Residual	164.402	247	.666		
	Total	238.964	249			
a. Dependent Variable: Challenges & Concerns						
b. Predictors: (Constant), Lack of transparency in AI marketing reduces my trust in the brand.						

Table 4.18 Coefficients[a]						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	**Std. Error**	**Beta**		
1	(Constant)	1.051	.284		3.696	.000
	Too much personalization feels intrusive to me.	.418	.067	.374	6.236	.000
	Lack of transparency in AI marketing reduces my trust in the brand.	.295	.065	.273	4.550	.000
a. Dependent Variable: Challenges & Concerns						

Oneway

Table 4.19 ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
I believe AI/ML helps businesses predict customer needs better.	Between Groups	27.633	4	6.908	11.057	.000
	Within Groups	153.071	245	.625		
	Total	180.704	249			
AI-driven ads are more relevant to me than traditional ads.	Between Groups	15.356	4	3.839	5.069	.001
	Within Groups	185.544	245	.757		
	Total	200.900	249			
	Between Groups	27.271	4	6.818	11.510	.000

Predictive analytics helps me show the right products at the right time.	Within Groups	145.129	245	.592		
	Total	172.400	249			

The regression results (Table 4.16) show an R value of 0.559, reflecting a moderately strong positive correlation between the predictors and the dependent variable, "Challenges & Concerns." The R Square value of 0.312 indicates that approximately 31.2% of the variance in challenges and concerns related to AI-driven marketing is explained by the predictors, which is a substantial explanatory power. The ANOVA results (Table 4.17) further confirm the overall significance of the model ($F = 56.011$, $p < 0.001$), suggesting that the predictors collectively play a significant role in shaping consumer concerns about AI/ML in marketing.

The coefficients table (Table 4.18) highlights that both predictors are statistically significant. The statement "Too much personalization feels intrusive to me" ($B = 0.418$, $p < 0.001$) has the most decisive influence, indicating that excessive personalization is a key factor contributing to consumer discomfort and concerns. Equally, such a statement as "Lack of transparency in AI marketing reduces my trust in the brand" ($B = 0.295$, $p < 0.001$) also plays an important role, and the need to be transparent and open in the AI marketing practices is crucial. These results suggest that although AI/ML personalization can be beneficial, the overuse and lack of transparency can backfire and lead to consumer mistrust and rejection.

Table 4.19 of the one-way ANOVA also gives additional information on the differences in consumer perceptions between groups. The remark stated, "I believe AI/ML assists businesses in predicting customer requirements more accurately," and gives a statistically significant difference between groups ($F = 11.057$, $p < 0.001$), stating that the consensus of consumers about this aspect is meaningfully different among demographic or usage groups. Likewise, the article also presents significant disparities in the relevance of AI-driven ads to me versus traditional ads ($F = 5.069$, $p = 0.001$), the explanatory strength of which is somewhat lower than that of other predictors. Finally, the group difference of the last category, namely, predictive analytics assists in displaying the right products at the right time, has good group differences ($F = 11.510$, $p < 0.001$).

The outcomes of these ANOVAs indicate that the perception of the usefulness and effectiveness of AI/ML in consumers is not unanimous; rather, it depends on some underlying demographic or behavioral differences.

The results show that although consumers understand the advantages of AI/ML in predicting needs and personalizing offers, there are major problems with privacy,

intrusiveness, and lack of transparency. Those issues have the potential to harm trust and acceptance and set obstacles on the way to the success of AI-powered marketing campaigns. Also, the category distinction in the perceptions underlines that marketers should implement segmented strategies and utilize AI-centered campaigns that would direct AI-based campaigns based on the differences in demographics and behavior, instead of implementing the same personalization tactics.

Table 4.20 ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Personalized marketing messages influence my buying decisions.	Between Groups	20.408	4	5.102	7.743	.000
	Within Groups	161.436	245	.659		
	Total	181.844	249			
I feel that personalized ads save me time when searching for products.	Between Groups	26.895	4	6.724	15.972	.000
	Within Groups	103.141	245	.421		
	Total	130.036	249			
I am more likely to click on ads tailored to my browsing behavior.	Between Groups	21.035	4	5.259	8.658	.000
	Within Groups	148.821	245	.607		
	Total	169.856	249			

The ANOVA results in Table 4.20 indicate that consumer responses to personalized marketing messages show statistically significant variation across groups. For the statement "Personalized marketing messages influence my buying decisions", the analysis yielded an F value of 7.743 with $p < 0.001$, confirming that perceptions differ meaningfully between groups. It suggests that while personalized messages influence purchase decisions, the degree of influence varies across demographic or behavioral categories of respondents.

Similarly, the statement "I feel that personalized ads save my time in product search" recorded the most substantial group differences ($F = 15.972$, $p < 0.001$). It indicates that the time-saving benefits of personalization are not perceived equally by all respondents, with certain groups valuing this efficiency more than others.

Finally, the statement *"I am more likely to click on ads that are tailored to my browsing behavior"* also showed significant variation ($F = 8.658$, $p < 0.001$). It highlights

that respondents' receptiveness to behavior-based personalized ads differs, suggesting heterogeneity in how consumers engage with AI-driven advertising strategies.

Table 4.21 ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
I believe AI-driven marketing respects my privacy.	Between Groups	30.672	2	15.336	21.994	.000
	Within Groups	172.228	247	.697		
	Total	202.900	249			
I am comfortable with brands using AI to predict my preferences.	Between Groups	14.902	2	7.451	11.561	.000
	Within Groups	159.198	247	.645		
	Total	174.100	249			

The ANOVA results in Table 4.21 reveal statistically significant group-level differences in perceptions of privacy and comfort in AI-driven marketing. For the statement "I believe AI-driven marketing respects my privacy," the analysis produced an F value of 21.994 with $p < 0.001$, indicating that respondents differ significantly in their views on whether AI-driven marketing upholds privacy standards. It suggests that privacy remains a sensitive and divisive issue, with some groups perceiving AI practices as respectful while others remain skeptical.

Similarly, the statement "I am comfortable with brands using AI to predict my preferences" also shows significant differences across groups ($F = 11.561$, $p < 0.001$). It indicates that consumer comfort with predictive personalization varies, likely influenced by prior digital experiences, trust in brands, and individual attitudes toward data usage.

Overall Interpretation

The findings underscore that privacy concerns and comfort with predictive personalization are not uniformly experienced across consumers. While some respondents express higher acceptance of AI-driven strategies, others remain cautious due to privacy-related apprehensions. These results suggest that brands adopt a differentiated approach, ensure transparent practices, and tailor their AI strategies to build comfort and trust among diverse consumer segments.

Table 4.22 ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Personalized ads increase my willingness to try new brands.	Between Groups	22.809	4	5.702	10.907	.000
	Within Groups	128.087	245	.523		
	Total	150.896	249			
I have purchased products/services due to personalized marketing on social media.	Between Groups	25.669	4	6.417	12.145	.000
	Within Groups	129.455	245	.528		
	Total	155.124	249			
I believe businesses using AI/ML have more effective sales outcomes.	Between Groups	63.280	4	15.820	29.218	.000
	Within Groups	132.656	245	.541		
	Total	195.936	249			

The ANOVA results in Table 4.22 reveal significant differences among groups concerning personalized advertising and sales impact perceptions. For the statement "Personalized ads increase my willingness to try new brands," the F value of 10.907 with $p < 0.001$ indicates that respondents vary considerably in how strongly they feel personalized ads motivate them to explore new brands. It suggests that personalization appeals differently across demographic or behavioral segments.

The statement "I have purchased products/services due to personalized marketing on social media" also shows a statistically significant difference across groups ($F = 12.145$, $p < 0.001$). It highlights that while personalized social media marketing influences actual purchases, its effect is not uniform and depends on consumer characteristics such as age, income, or frequency of social media use.

Most notably, the statement "I believe businesses using AI/ML have more effective sales outcomes" records the highest variation between groups ($F = 29.218$, $p < 0.001$). It indicates a substantial divergence in perceptions regarding the effectiveness of AI/ML for driving sales, reflecting that some groups hold high confidence in AI-enabled marketing strategies while others remain more cautious.

Table 4.23 ANOVA

	Sum of Squares	df	Mean Square	F	Sig.

Too much personalization feels intrusive to me.	Between Groups	58.918	4	14.730	27.120	.000
	Within Groups	133.066	245	.543		
	Total	191.984	249			
Lack of transparency in AI marketing reduces my trust in the brand.	Between Groups	54.250	4	13.562	22.066	.000
	Within Groups	150.586	245	.615		
	Total	204.836	249			

The ANOVA results in Table 4.23 reveal that respondents hold significantly different views on the challenges associated with AI-driven marketing. For the statement "Too much personalization feels intrusive to me," the F value of 27.120 with $p < 0.001$ demonstrates highly significant group-level differences. This finding indicates that perceptions of intrusiveness vary considerably, with some consumer groups being more sensitive to over-personalization than others. Individual privacy concerns, frequency of digital engagement, or tolerance levels for targeted advertising may shape such differences.

Similarly, the statement "Lack of transparency in AI marketing reduces my trust in the brand" also shows statistically significant group differences ($F = 22.066$, $p < 0.001$). It suggests that not all consumers perceive transparency issues similarly; while some groups are more distrustful of opaque AI-driven practices, others may be relatively more accepting.

The findings underscore that challenges such as intrusiveness and lack of transparency are not universally experienced but vary across consumer segments. It highlights the need for marketers to adopt consumer-sensitive approaches, balancing the benefits of personalization with respect for privacy and ensuring transparency in AI-driven practices. Failure to do so may heighten concerns in more sensitive groups, reducing trust and acceptance of AI-enabled marketing strategies.

Quantitative Findings

The quantitative analysis of answers from 250 participants in Pune City yielded numerous interesting conclusions about the influence of AI and ML on predictive and customized marketing. Regression findings showed that consumers' belief that AI/ML can help companies better forecast what customers want greatly impacted whether they used these technologies in marketing ($\beta = 0.261$, $p < 0.001$). It confirms that predictive analytics is a key motivator. Personalization also turned out to be a

significant feature that affects purchasing behavior. Respondents said that customized adverts save time ($\beta = 0.280$, $p < 0.001$) and make them more likely to buy ($\beta = 0.160$, $p = 0.020$). Privacy concerns were shown to be the main thing that affected consumer trust. Respect for privacy made trust go up a lot ($\beta = 0.348$, $p < 0.001$), while just being comfortable with AI forecasts did not have a significant effect. The most important factor regarding buy intention and sales impact was the idea that companies that use AI/ML have better sales results ($\beta = 0.504$, $p < 0.001$). It means that people think that AI-driven marketing leads to real gains in sales performance. Challenges were also found, with too much customization ($\beta = 0.374$, $p < 0.001$) and not enough transparency ($\beta = 0.273$, $p < 0.001$), both making people less trusting and more resistant. The findings of the ANOVA showed that demographic characteristics also affected acceptability levels. Younger consumers (18–34 years) and higher-income groups were more receptive to AI-driven marketing than older or lower-income respondents. The results show that predictive analytics, personalization, and trust are important factors shaping how people feel about a brand. On the other hand, ethical issues like privacy and transparency are still significant obstacles to complete adoption.

Discussion

Introduction

This chapter analyses the results from Chapter 4 in the context of the study goals, hypotheses, and relevant literature. It talks about how AI and ML are changing how people act, how likely they are to buy anything, and how well sales are doing in Pune City. It also discusses the problems that come with too much customization and privacy issues before discussing the study's theoretical, managerial, and social effects.

Interpretation of Key Findings

The regression findings showed that predictive analytics makes people think that AI/ML usage in marketing is much better ($\beta = 0.261$, $p < 0.001$). People who answered the survey said that AI helps companies predict what customers want and provide the correct items at the right time. It aligns with what Wedel and Kannan (2016) said: predictive analytics is critical to targeted digital marketing.

Personalization also turned out to be a key factor in getting people to purchase things. The results showed that tailored marketing messages made people more likely to buy ($\beta = 0.160$, $p = 0.020$) and that personalized adverts saved people time ($\beta = 0.280$, $p < 0.001$). These findings corroborate the research conducted by Tam and Ho (2020),

which indicated that consumers exhibit greater receptivity to customized advertisements compared to generic ones.

Consumer trust emerged as a mediating variable, significantly impacted by privacy protection ($\beta = 0.348$, $p < 0.001$). However, comfort with AI-driven predictions alone was not significant, indicating that confidence in AI marketing relies more on openness and ethical data management than technical innovation. It corroborates the assertions of Martin and Murphy (2017), asserting that ethical issues are essential for maintaining customer trust in digital marketing.

The assumption that organizations adopting AI/ML generate better results was the strongest factor that affected purchase intention and sales performance ($\beta = 0.504$, $p < 0.001$). This conclusion supports the Technology Adoption Model (Davis, 1989), which states that perceived utility is a key factor in adoption. It also shows that people in Pune think AI-enabled marketing has real commercial benefits, such as improved conversion rates and better targeting.

There were, however, clear problems. Over-personalization ($\beta = 0.374$, $p < 0.001$) and lack of transparency ($\beta = 0.273$, $p < 0.001$) were identified as important factors that diminish trust and foster consumer resistance. These findings corroborate Awad and Krishnan's (2006) caution that excessive targeting may undermine confidence, underscoring the delicate balance between relevance and intrusion.

The ANOVA findings also showed that there were demographic disparities. For example, younger customers (18–34 years) and higher-income groups were more open to AI-driven personalized marketing than older or lower-income respondents. It corroborates the Theory of Planned Behavior (Ajzen, 1991), since younger generations see enhanced control and significance in embracing digital advancements.

Comparison with Literature

The study's findings align significantly with international literature. Huang and Rust (2020) demonstrated that AI revolutionizes marketing by enhancing segmentation, targeting, and engagement, aligning with the favorable views reported in Pune. Chatterjee et al. (2021) noted that AI-driven social media marketing improves relationships between consumers and brands, which is what this research found.

However, significant contextual disparities were also noted. Unlike Western customers, people in Pune were more worried about privacy and openness. India's legislative frameworks are changing, including the Digital Personal Data Protection Act (DPDPA, 2023), which has made people more informed but has not completely calmed their fears yet. So, even if AI marketing is generally acknowledged, it still depends on ethical behavior.

Theoretical Implications

This research enhances ideas of marketing and technology adoption in several aspects. First, it expands the Technology Acceptance Model (TAM) by showing that perceived utility (such as better targeting and sales success) is a big reason why people in Pune adopt AI/ML marketing. Second, it confirms that trust is a mediator, demonstrating that personalization is inadequate without accompanying openness and privacy protections. Third, the results show how demographic factors like age, wealth, and digital literacy may change the effects of TAM and the Theory of Planned Behavior (TPB) in the setting of growing urban marketplaces.

Managerial Implications

The findings have substantial practical value for businesses in Pune and beyond:

- Invest in Predictive Analytics: Firms should leverage AI tools to forecast customer needs and deliver timely, relevant offers.
- Design Balanced Personalization: Campaigns must enhance convenience without overwhelming consumers with excessive targeting.
- Build Transparency and Trust: Brands must clearly communicate how consumer data is collected and used, aligning with ethical standards.
- Segment by Demographics: Younger, digitally active, and higher-income consumers are more receptive; strategies should prioritize these segments while addressing the concerns of older groups.
- Monitor Over-Personalization Risks: Firms must avoid excessive targeting that consumers perceive as intrusive.

Societal Implications

The results show that there are both chances and threats for society. AI marketing makes things easier for customers and gives them customized experiences, but it also raises ethical questions about data protection and fairness in algorithms. Regulators must preserve consumers' rights while allowing new ideas to come forward. It is essential in Pune since digital adoption is speeding up, so finding a balance between development and moral responsibility is important.

Conclusion

The research shows that AI and ML are changing the way social media marketing works in Pune City by making it more customized and predictive. Predictive analytics and personalization significantly improve customer engagement and sales results. On the other hand, customer trust is a key factor in adoption. However, issues including privacy concerns, lack of transparency, and too much customization need to be dealt with for long-term use. The results corroborate worldwide trends while providing context-specific insights from the burgeoning Indian digital economy.

The research investigated the influence of AI and ML applications in predictive and personalized marketing on customer engagement, buying intentions, and sales results in Pune City. The results may be summed up as follows:

AI/ML Adoption and Predictive Analytics - Customers know that AI helps firms better understand what their customers want and provides them with helpful information. It shows that predictive analytics is a key factor in improving marketing.

Personalization and Buying Behavior: Personalized adverts and suggestions favorably affect people's plans to buy, especially when they were seen as saving time and being easy to use.

Consumer Trust as a Mediator - Protecting privacy and being open about what AI does were important for developing trust. Just being okay with AI predictions did not really help trust.

Purchase Intention and Sales Impact—People thought that AI and ML would help businesses do better and make them more likely to buy, which shows that AI marketing can help sales rise.

Problems and worries — too much personalization and not enough openness-made people less trusting and more resistant.

Differences in Demographics: AI-driven marketing worked better on younger people and those with higher incomes than older people or those with lower incomes. It shows how demographics may affect marketing.

Practical Recommendations

Based on these results, companies, marketers, and politicians should consider the following suggestions:

- For Businesses and Marketers: Buy predictive analytics technologies to help you target customers better and make your campaigns more successful.
- Create personalized plans that make things easier for customers without bombarding them with too many adverts.

- Keep data open by showing how you acquire, handle, and utilize client information.
- Do not make things too personal; balance privacy and relevancy.
- Make plans for each group, focusing on younger, tech-savvy customers while slowly gaining the confidence of older ones.
- For those who develop laws and set rules
- Protect consumer rights by strengthening data protection laws and ensuring they are followed (like the Digital Personal Data Protection Act, 2023).
- Promote the implementation of ethical AI techniques that ensure things are fair, reduce algorithmic bias, and prevent personal data from being misused.
- Help run initiatives that teach people about AI-driven marketing and their rights regarding how their data is used.

Theoretical Contributions

The research enhances academic literature by expanding the Technology Acceptance Model (TAM) and the Theory of Planned Behavior (TPB) within Pune's realm of AI marketing. It shows that perceived utility (sales performance), personalization (attitude), and privacy-driven trust (mediator) are all important factors that affect whether consumers accept anything. The moderating influence of demography also sheds light on how consumers in developing economies act.

Limitations of the Study

The research had certain limitations, even if it made some important contributions:

The sample was limited to Pune City, so the findings may not apply to other areas.

- The study mostly used self-reported survey data, which might be affected by social desirability or response bias.
- The emphasis was on social networking sites, not other digital marketing channels like search engines and online stores. The results are just a snapshot and may need to be looked at again since AI and ML technologies are changing quickly.

Future Research Directions

To enhance this study, further research could:

- Extend to more cities and areas in India to include a wider cultural and demographic variety.
- Use long-term research to see how people's views of AI-driven marketing change.
- Investigate digital channels other than social media to see how people respond on different platforms.
- Use experimental study methods to get more direct measurements of behavioral outcomes, making self-reporting less necessary.
- Look at how predictive and customized marketing may be used in certain retail, hotel, and healthcare industries.

Conclusion

In conclusion, AI and ML are changing marketing in Pune City by making it possible to target people based on what they want and connect with them in a unique way. It dramatically impacts how people act and how well sales do. However, people will only embrace new technologies if they are open about how they work, safeguard privacy, and reasonably utilize personalization. Companies that responsibly use technology and are honest are more likely to earn customers' confidence and loyalty over time. Policymakers also have a significant role in setting rules that protect consumers and encourage new ideas.

The research enhances academic understanding and offers practical insights for practitioners and regulators. By using AI and ML responsibly, social media marketing in Pune may be a strong way to build a company in a way that lasts and improves customers' experiences.

Table 5.1

Objective	Hypothesis	IV(s)/Mediator/Moderator	DV	Test(s)
Role of AI/ML in predictive marketing	H1	AI, ML, Adopt, Predictive Cap, Personalization	Sales Perf	Regression
The effect of personalization on buying	H2	Personalization	Purchase Int	Regression
Predictive analytics → targeting & cost	H4	Predictive Cap	Target Accuracy, Cost Reduction	Paired t-test (

Acceptance & trust pathway	H3	Personalization → **Trust**	Purchase Int	Regressions
Age differences in acceptance	H5	Age Group (1/2/3)	Acceptance (Trust or index)	One-way ANOVA

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