



ANALYZING THE EFFECTIVENESS OF AI-POWERED SOCIAL MEDIA MARKETING ON BRAND ENGAGEMENT AMONG GENERATION Z CONSUMERS IN VIJAYAWADA

Mr. Vasireddy Charan Sai¹, Dr. K. Krishna Rao²

¹research scholar, department of BBA, KLEF

² assistant professor, department of BBA, KLEF

Email: krishnaraokunapareddy@kluniversity.in

ABSTRACT :

Artificial Intelligence (AI) is being integrated into social media marketing through personalizations, recommendation systems, automated content creation, chatbots and data-driven content distribution. This research investigates the efficacy of AI-powered social media marketing on brand engagement of Generation Z consumers in Vijayawada. A descriptive cross-sectional study design was followed, and a structured online questionnaire was administered to 86 participants. This study analyzed the respondents' characteristics, social-media usage, awareness of AI marketing, perception about AI-powered marketing, brand engagement, purchase intention and concerns regarding AI marketing. Frequency and percentage distributions, mean scores, Cronbach's alpha and Pearson correlation were performed. Perception about AI-powered social media marketing had a mean score of 3.94 out of 5, whereas brand-engagement had a mean score of 3.97. Pearson correlation was $r = 0.744$ ($p < 0.001$), signifying a strong, positive association between respondents' perception about AI-marketing and brand engagement. Personal data privacy and excessive personalized advertising were the prominent concerns. Interpreting these results should be done with caution due to the non-probability sampling technique and should not be generalized to the entire population of Generation Z consumers in Vijayawada.

Keywords: Artificial Intelligence, Social Media Marketing, Brand Engagement, Generation Z, Personalization, Consumer Behaviour, Vijayawada.

1. Introduction

Digital marketing has transformed traditional modes of brand-consumer engagement. Social-media platforms enable businesses to publish content, promote products, address queries and establish relationships with customers. Artificial Intelligence has enhanced the scope and depth of such engagement through recommendation systems, personalized advertising, automated content creation, chatbots, customer-data analysis and algorithmic content placement.

Generation Z represents a vital segment of digital consumers as social media is deeply integrated into their communication, entertainment and product-searching activities. Brand engagement encompasses following a brand, liking or sharing content, commenting, seeking information, establishing trust, feeling connected to a brand and exhibiting loyalty. AI-powered marketing can facilitate these activities by delivering relevant, timely and valuable content to consumers.

However, concerns regarding personal data privacy, complex recommendation algorithms and excessive personalization could impact consumer receptivity. The present study explores Generation Z consumers in Vijayawada and analyzes their awareness and perceptions about AI-powered social media marketing, brand engagement and concerns regarding AI marketing use.

2. Review of Literature

Köse and Sert (2017). Köse and Sert explored the contribution of artificial intelligence to content-marketing processes. Their research discussed AI-based content creation, personalization and intelligent content delivery, emphasizing the potential of AI to enhance marketing content relevance to consumers. However, the study did not specifically investigate Generation Z consumers in India.

Hollebeek, Glynn, and Brodie (2014). Hollebeek, Glynn, and Brodie conceptualized a framework to understand consumer brand engagement in a social media context. Their study focused on cognitive, emotional and behavioural aspects of engagement, providing foundational insights into consumer-brand interactions. However, it did not investigate AI-powered social media marketing.

Helme-Guizon and Magnoni (2019). Helme-Guizon and Magnoni examined consumer brand engagement and social interactions in brand-hosted social media. Their research established relationships between consumer engagement, social engagement and brand loyalty. However, AI-powered personalization was not the central focus.

Tunca (2019). Tunca conducted a pre-registered replication study of consumer brand engagement using Instagram. The research aimed to replicate an established brand-engagement model, with broad support for its applicability but some measurement-related concerns. However, it did not investigate AI-powered marketing among Generation Z consumers in Vijayawada.

Jayasingh (2019). Jayasingh studied consumer brand engagement on social networking sites and its impact on brand loyalty. The research considered information seeking, social influence and economic benefits as engagement drivers. The study identified the role of information and social interaction in consumer engagement. However, it did not specifically examine AI-powered marketing.

Brandão, Pinho, and Rodrigues (2019). Brandão, Pinho, and Rodrigues investigated factors influencing luxury brand engagement on social media. Their study examined consumer involvement and its association with brand connection and usage intentions. However, the research focused on luxury brands rather than AI-powered marketing of Generation Z consumers.

Osei-Frimpong, McLean, and Famiyeh (2020). Osei-Frimpong, McLean, and Famiyeh studied social-media brand engagement by analyzing brand knowledge, social pressure, social relatedness and brand trust. Their research highlighted the influence of consumer knowledge and social interactions on engagement, as well as the importance of brand trust. However, the specific impact of AI-based personalization was not established in Vijayawada.

Unnava and Aravindakshan (2021). Unnava and Aravindakshan examined consumer engagement with brands publishing content on multiple social-media platforms. Their study analyzed direct engagement, spillover effects and engagement duration, establishing that interactions on one platform could influence consumer behaviour on another. However, it did not focus on AI-powered content personalization.

Saha and colleagues (2024). Saha and colleagues investigated Generation Z consumers' intention to click on personalized social-media advertisements. The research considered personalization, perceived usefulness, personality traits and privacy concerns, emphasizing the need to understand consumer preferences in developing effective advertisements. However, ad-clicking behaviours do not fully represent broad-spectrum brand engagement, including trust, interaction and loyalty.

Teepapal (2025). Teepapal examined AI-driven personalization and consumer perceptions in social-media engagement. The study analyzed relationships between personalization, perceived usefulness, consumer trust and privacy concerns. It identified the importance of consumer perceptions in AI-powered marketing effectiveness. However, further research is required to establish these relationships among Generation Z consumers in Vijayawada.

Maulana, Dewi, and Ulfa (2026). Maulana, Dewi, and Ulfa studied AI-supported ephemeral-content marketing and customer engagement among Generation Z consumers in Indonesia. Their research considered perceived personalization as a determinant linking marketing content with engagement. However, the study's focus was on the Indonesian market rather than the Indian context.

Study published in Telematics and Informatics Reports (2026). This study analyzed algorithmic personalization in Instagram advertisements and Generation Z consumers' purchase intentions. It examined perceived creativity, authenticity and individual differences in information processing communication.

3. Research Gap

Existing research has investigated AI-enabled personalization, social-media engagement, consumer trust, privacy and AI-generated marketing content. However, limited empirical studies have examined the association between perceptions of AI-powered social-media marketing and brand engagement among Generation Z consumers in the local context. Several studies focus on alternative geographical locations or narrower outcomes, such as ad-clicking behaviours and purchase intention. This study, therefore, aims to investigate the relationship between perceptions of AI-powered social-media marketing and brand engagement in the local sample.

4. Objectives of the Study

- 1.To examine the level of awareness of Generation Z consumers about the use of AI in social-media marketing.
- 2.To determine the perceptions of Generation Z consumers about AI-powered advertisements, personalized content, recommendations and AI-powered brand interaction.
- 3.To measure the level of brand engagement associated with AI-powered social-media marketing.
- 4.To examine the relationship between perceptions of AI-powered social-media marketing and brand engagement.
- 5.To identify the major concerns of Generation Z consumers about the use of AI in social-media marketing.

5. Research Questions

- 1.How aware are the Generation Z consumers about AI use in social-media marketing?
- 2.How do consumers perceive AI-powered advertisements, personalized content and recommendations?
- 3.What is the level of brand engagement associated with AI-powered social-media marketing?
- 4.Is there a significant relationship between AI-marketing perceptions and brand engagement?
- 5.What are the concerns of consumers about AI-powered social-media marketing?

6. Hypotheses

- H1: Awareness of AI-Powered Social Media Marketing
- (H₀₁): There is no significant relationship between awareness about AI-powered social media marketing and brand engagement among the

Generation Z consumers.

- H2: Personalized Advertisements
- (H₀₂): Personalized advertisements have no significant relationship with brand engagement among the Generation Z consumers.
- H3: AI-Powered Content
- (H₀₃): AI-powered social media content has no significant relationship with consumer interaction with brands.
- H4: AI Recommendations
- (H₀₄): AI-based product and brand recommendations have no significant relationship with brand interest among the Generation Z consumers.
- H5: AI-Powered Marketing and Brand Engagement
- (H₀₅): There is no significant relationship between consumer perceptions about AI-powered social media marketing and brand engagement.
- H6: Privacy Concerns
- (H₀₆): Privacy concerns regarding AI-powered social media marketing have no significant relationship with consumer engagement with brands.

8. Research Methodology

8.1 Research Design

The study follows a descriptive and analytical quantitative research design. The descriptive aspect provides an overview of respondents' characteristics, social-media usage, awareness, perceptions, engagement and concerns. The analytical aspect investigates the association between AI-powered social-media marketing perception and brand engagement.

8.2 Study Area and Population

The study area comprises Generation Z consumers in Vijayawada, Andhra Pradesh, who use social-media platforms and could be exposed to AI-powered marketing content.

8.3. Sample and Sampling Technique

The study analyzes 86 valid online questionnaire responses. A non-probability online sampling technique was used. As the sampling method does not ensure that every member of the target population has an equal known chance of selection, the findings should be interpreted as applicable to the surveyed respondents and not as representative of all Generation Z consumers in Vijayawada.

8.4. Data Collection

The primary data were collected using a structured online questionnaire. It comprised demographic questions, social-media usage questions, awareness questions, five-point Likert-scale statements, an overall-opinion question and a concern question about AI-powered marketing.

8.5. Questionnaire Preparation

The AI-powered social media marketing perception index was formed using Q13–Q20, and the brand-engagement index was formed using Q21–Q30. The Likert scale was coded as 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree. The reported Cronbach's alpha values were 0.955 and 0.964 for the perception and engagement scales, respectively, indicating high internal consistency in this dataset.

9. Data Analysis

Frequency and percentage distributions were used for categorical variables, mean scores for Likert-scale statements, Cronbach's alpha for internal consistency and Pearson correlation to investigate the association between AI-powered social-media marketing perception and brand engagement.

10. Analysis

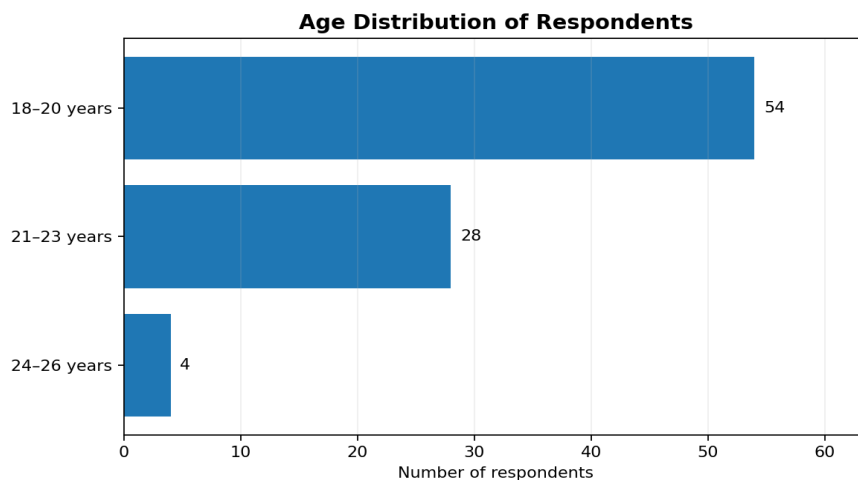
The analysis shows that respondents have positive perceptions about AI-powered social media marketing (mean = 3.94) and brand engagement (mean = 3.97). Both scales exhibit high reliability with Cronbach's alpha values of 0.955 and 0.964, respectively. Pearson correlation ($r = 0.744$, $p < 0.001$) indicates a strong, significant positive relationship, supporting the alternative hypothesis. However, privacy concerns and excessive personalized advertising are prominent issues.

11. Data Analysis and Interpretation

The analysis explores the respondents' awareness and perceptions about AI-powered social media marketing and investigates how these perceptions are

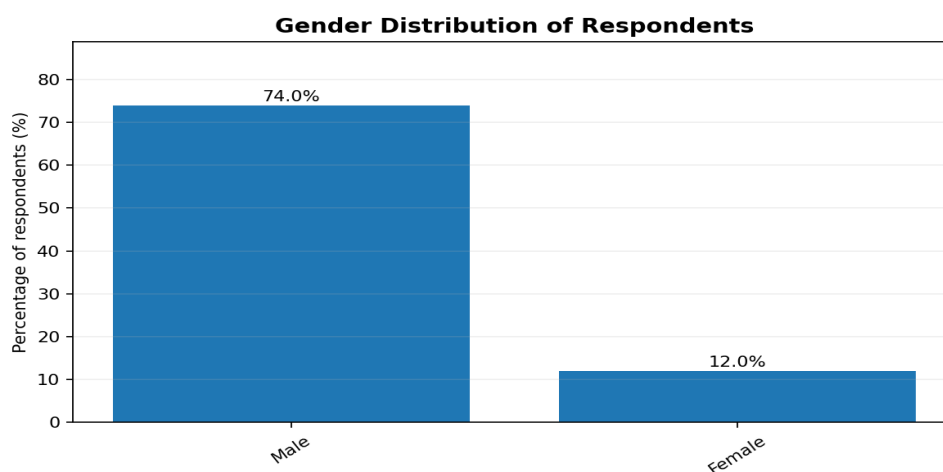
associated with brand engagement. The key results and the graph interpretations are provided below.

8.1 question 1: What is your age?



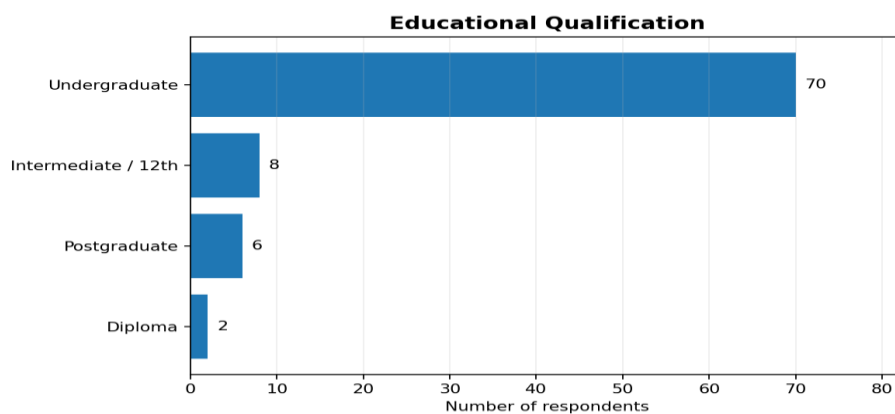
Interpretation: The sample was concentrated in the 18–20 age group, which accounted for 54 respondents (62.8%). A further 28 respondents (32.6%) were aged 21–23, while 4 respondents (4.7%) were aged 24–26.

8.2 question 2: What is your gender?

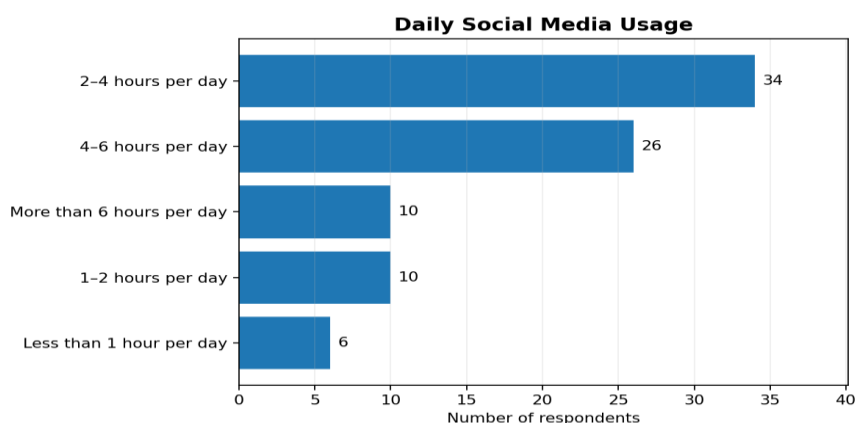


Interpretation: Male respondents constituted 86.0% of the sample, while female respondents represented 14.0%. The sample was therefore strongly male-dominated.

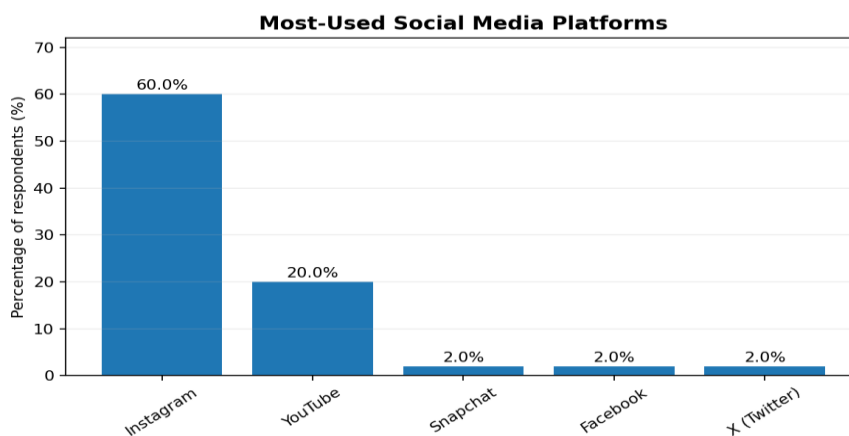
8.3 question 3: What is your highest educational qualification?



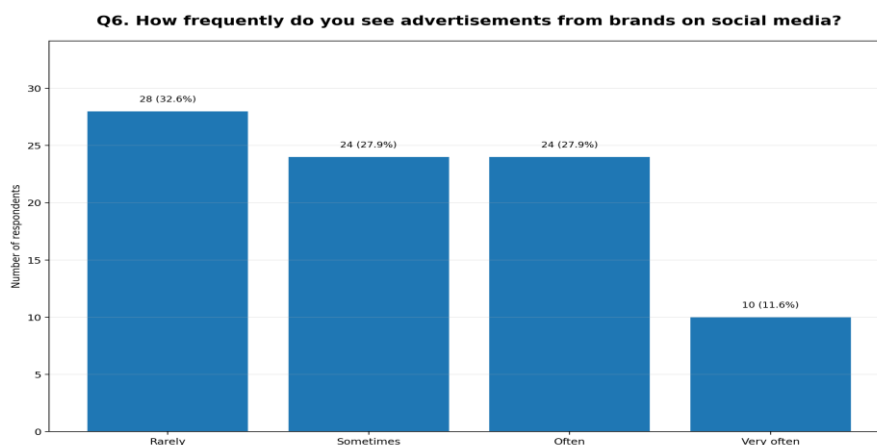
Interpretation: Undergraduate students formed the largest educational group at 81.4%. Intermediate/12th respondents represented 9.3%, postgraduates 7.0% and diploma holders 2.3%.

8.4 question 4: How frequently do you use social media?

Interpretation: The largest group (39.5%) reported 2–4 hours of daily social-media use, followed by 30.2% reporting 4–6 hours. Smaller groups reported more than 6 hours (11.6%), 1–2 hours (11.6%) and less than 1 hour (7.0%).

8.5 question 5: Which social-media platform do you use most frequently?

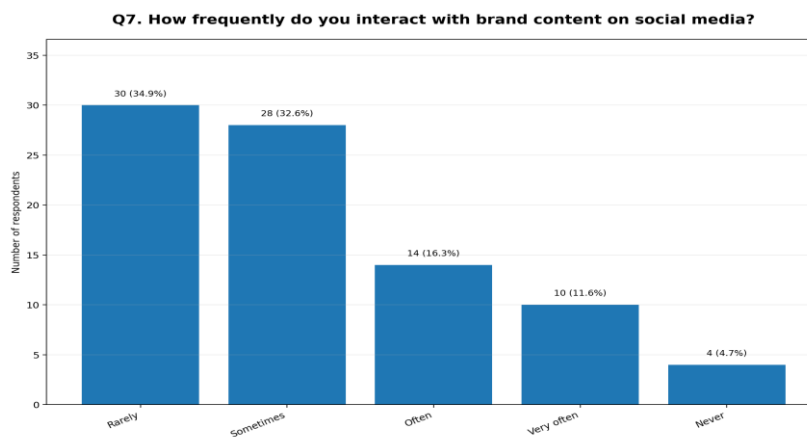
Interpretation: Instagram was the dominant platform, used most frequently by 69.8% of respondents, followed by YouTube at 23.3%. Snapchat, Facebook and X (Twitter) each accounted for 2.3%.

8.6 question 6: How frequently do you see advertisements from brands on social media?

Interpretation: Awareness was relatively high: 76.7% knew that brands use AI for social-media marketing, 18.6% were not aware and 4.7% were unsure.

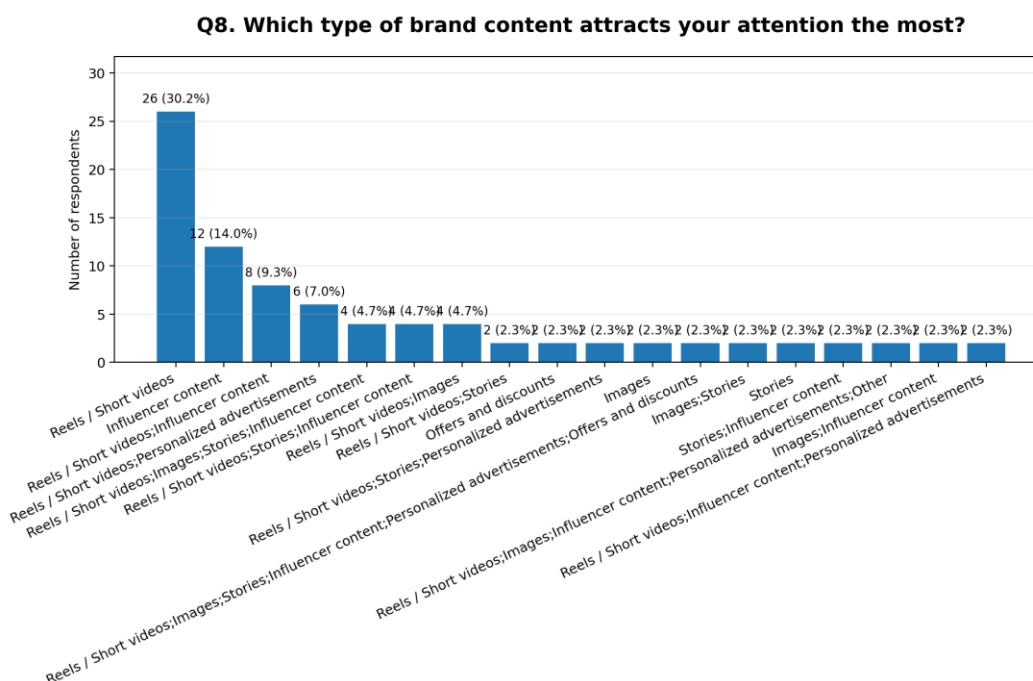
8.7 question 7: How frequently do you interact with brand content on social media?

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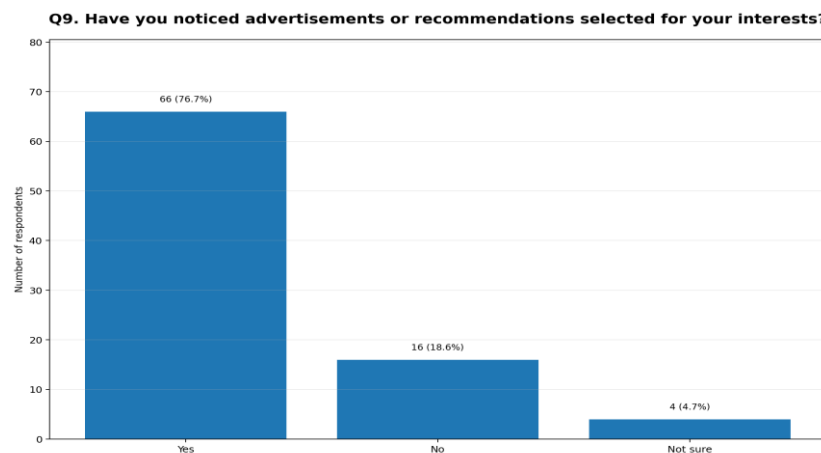


Interpretation: The overall perception mean was 3.94/5, indicating a generally favourable perception. AI-powered content capturing attention and helping consumers discover brands and products both scored 4.02. Making brands appear innovative and modern and comfort with personalization each scored 4.00.

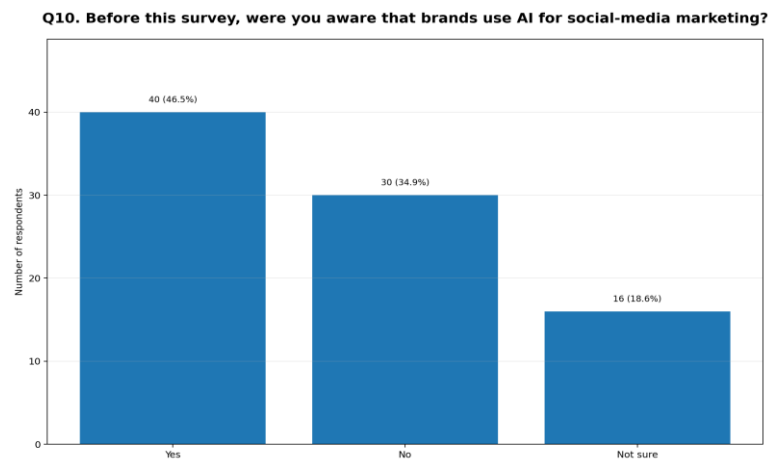
8.8 question 8: Which type of brand content attracts your attention the most?



Interpretation: The overall brand-engagement mean was 3.97/5. The highest-rated statement was the likelihood of remaining loyal to brands that provide relevant and engaging social-media experiences (4.12), followed by following brands with engaging personalized content (4.09) and the view that AI marketing increases engagement (4.07).

8.9 question 9: Have you noticed advertisements or recommendations on social media that appear to be specifically selected for your interests?

Interpretation: Overall opinion was generally favourable. Positive responses accounted for 44.2% and very positive responses for 14.0%, giving a combined favourable share of 58.2%. Neutral responses accounted for 30.2%, while 11.6% expressed a negative opinion.

8.10 question 10: Before this survey, were you aware that brands use Artificial Intelligence (AI) for social-media marketing?

Interpretation: Privacy of personal data was the most frequently reported concern (34.9%), followed by too many personalized advertisements (30.2%). Lack of trust in AI-generated content accounted for 14.0%, misleading advertisements for 11.6%, and 7.0% reported no major concerns.

9. Findings of the Study

86 responses were received and analyzed, and the sample was mostly made up of young undergraduate respondents.

Instagram was most-used social-media platform, reported by 69.8% of respondents.

76.7% of respondents were aware that brands use AI for social-media marketing.

The mean AI-powered social-media marketing perception score was 3.94 out of 5.

The mean brand-engagement score was 3.97 out of 5.

The strongest brand-engagement item was continued loyalty to brands offering relevant and engaging social-media experiences, with a mean of 4.12.

A strong positive relationship was found between AI-marketing perception and brand engagement ($r = 0.744$, $p < 0.001$).

Privacy of personal data and excessive personalized advertising were the leading concerns.

The findings support the alternative hypothesis for the surveyed sample, but the non-probability sampling method limits generalization.

10. Suggestions

Use AI-based personalization to improve relevance while avoiding excessive targeting and repetitive advertisements.

Provide clear and transparent explanations of how consumer data are collected, used and protected.

Review AI-generated content for accuracy, authenticity and potentially misleading claims before publication.

Combine AI-driven efficiency with human creativity, monitoring and editorial oversight.

Use engaging formats such as short-form videos, Stories, recommendations and conversational tools to strengthen interaction.

11. Conclusion

The study indicates that AI-powered social-media marketing is positively associated with brand engagement among the surveyed Generation Z consumers in Vijayawada. The mean scores show generally favourable perceptions of AI-powered marketing and positive brand engagement, while the Pearson correlation ($r = 0.744$, $p < 0.001$) demonstrates a strong and statistically significant association between the two constructs. However, privacy and excessive personalization remain important concerns. Effective AI-powered social-media marketing should therefore combine personalization and engagement with transparency, responsible data use, authenticity and human oversight. Because the study uses 86 non-probability online responses, the findings should be interpreted as evidence from the selected sample rather than as representative estimates for all Generation Z consumers in Vijayawada.

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