



# The Influence of AI-Personalized Video Advertising on Consumer Purchase Behavior in Social Media Campaigns

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## Abstract

This study examines how AI-personalized video advertising on social media influences consumer purchase behavior. Using AI and machine learning, personalized ads are designed to match individual user preferences, making them more engaging than traditional advertisements. The research used a mixed-methods approach, combining questionnaires and open-ended responses from 400 participants who viewed both personalized and non-personalized video ads. The results showed that AI-personalized advertisements significantly improve consumer purchase behavior by increasing perceived personalization and emotional engagement. The study also found that emotional response acts as a mediator between personalized advertising and purchase behavior, while perceived personalization strengthens this relationship. Consumers are more likely to respond positively and show stronger purchase intentions when ads feel relevant and emotionally appealing. Overall, the research provides evidence that AI-driven personalized video advertising is more effective than traditional advertising and offers valuable insights for marketers aiming to improve social media advertising strategies. Purchase behavior in the study was measured indirectly through self-reported purchase intention and click behavior.

## Subject Areas

Advertising, Artificial Intelligence

## Keywords

AI-Personalized Advertising, Video Advertising, Consumer Purchase Behavior, Emotional Response, Perceived Personalization, Social Media Marketing, Digital Advertising Effectiveness

## 1. Introduction

Digital technologies have transformed modern marketing, with artificial intelligence (AI) becoming a major driver of innovation in advertising strategies. Businesses increasingly use AI-powered tools on social media platforms to analyze consumer behavior, preferences, and interactions in real time, enabling the creation of highly personalized advertising content [1] [2].

One significant development is AI-personalized video advertising, which combines the effectiveness of video content with data-driven personalization. Unlike traditional advertising that relies on generic messages, AI-personalized video ads adapt content based on user data such as browsing history, demographics, and online behavior, making advertisements more relevant and engaging [3]. The growing popularity of platforms such as Facebook, Instagram, TikTok, and YouTube has further increased the importance of video advertising, as video content effectively captures attention through visual, auditory, and emotional elements [4] [5].

Personalization has become essential because consumers increasingly expect content that is relevant and meaningful to their preferences [6]. Research shows that personalized advertising improves consumer engagement and behavioral outcomes by increasing attention and emotional connection [7] [8]. Emotional engagement is also a key factor influencing consumer attitudes and purchase behavior, as emotionally appealing advertisements strengthen the relationship between consumers and brands [9] [10]. AI-personalized video advertising enhances this effect by delivering emotionally relevant content tailored to individual preferences.

Despite the growing use of AI-personalized advertising, limited research has examined its direct impact on consumer purchase behavior in social media contexts [11]. In particular, the relationships among emotional response, perceived personalization, and consumer decision-making remain insufficiently explored. Perceived personalization, defined as the extent to which consumers recognize advertisements as tailored to their needs, is especially important because it influences how positively consumers respond to advertising content [12]. Additionally, repeated exposure to personalized advertisements may improve brand recognition and consumer attitudes, although excessive exposure can lead to advertising fatigue [13].

Therefore, this study aims to examine the influence of AI-personalized video advertising on consumer purchase behavior in social media campaigns, focusing on the roles of emotional response, perceived personalization, and exposure frequency. By addressing these gaps, the study contributes to the literature on AI-driven marketing and provides practical insights for improving the effectiveness of social media advertising strategies.

## 2. Literature Review

### 2.1. Integration of AI in Advertising

The integration of artificial intelligence (AI) into advertising has transformed how

marketers create, deliver, and optimize promotional content. By processing large amounts of consumer data, AI helps advertisers understand user behavior, preferences, and decision-making patterns with high accuracy [14] [15]. Through machine learning and predictive analytics, AI can identify consumer interaction patterns and deliver highly targeted advertisements in real time.

A major advantage of AI in advertising is its ability to automate personalization at scale. Unlike traditional advertising, which relies on broad audience segmentation, AI-driven systems analyze detailed data such as browsing history, purchase behavior, and engagement patterns to tailor content to individual users [16]. This increases advertisement relevance and improves consumer engagement and behavioral responses. AI also enables dynamic content generation, allowing advertisements to be continuously updated based on real-time feedback and changing consumer behavior [17].

Furthermore, AI improves advertising efficiency by automating processes such as audience targeting, bidding, and content optimization, helping marketers achieve higher return on investment (ROI) [18]. Consequently, AI has become a key component of modern digital marketing strategies. However, the use of personal data in AI-driven advertising also raises concerns regarding privacy and ethics, which may affect consumer trust and willingness to engage with personalized advertisements [19]. Therefore, marketers must balance effective personalization with ethical data practices.

## 2.2. Role of Personalization in Advertising

Personalization has become a key concept in modern advertising due to the growing demand for relevant and meaningful consumer experiences. Personalized advertising involves tailoring marketing messages to individual consumer characteristics, preferences, and behaviors, unlike traditional mass advertising that delivers generic content to broad audiences [20].

Studies show that personalized advertisements are more effective in attracting consumer attention and increasing engagement. When consumers perceive advertisements as relevant to their interests and needs, they are more likely to process the information, develop positive attitudes toward the brand, and engage in behaviors such as clicking on advertisements or making purchases [21] [22]. Personalized advertising also helps strengthen relationships between consumers and brands by creating a sense of recognition and understanding, which enhances trust and loyalty [23].

Contextual relevance is another important aspect of personalization, referring to how well advertising content matches the consumer's current situation, including time, location, and activity [24]. AI technologies support this process by analyzing real-time data and adjusting advertisements accordingly. However, the success of personalization also depends on consumer perception. If consumers view personalized advertising as intrusive or manipulative, it may create negative attitudes and reduce engagement [25]. Therefore, maintaining a balance between per-

sonalization and privacy is essential for effective advertising.

### 2.3. Consumer Engagement with Video Advertising

Video advertising has become a highly effective tool for engaging consumers in the digital era. Unlike static advertisements, video content combines visual, auditory, and narrative elements to create immersive experiences that capture attention and generate emotional responses [26]. The growth of social media platforms has further increased the importance of video advertising, as these platforms prioritize video content in their algorithms and interfaces.

Consumer engagement with video advertising is influenced by factors such as content quality, storytelling, and relevance. High-quality videos with clear and compelling messages are more likely to attract and maintain viewer attention [27]. Storytelling also strengthens engagement by creating emotional connections between consumers and the content. In addition, interactive features on digital platforms, such as likes, shares, comments, and clickable links, allow consumers to actively participate in the advertising experience, improving communication between brands and consumers [28].

Personalization further enhances the effectiveness of video advertising. Personalized video advertisements that include user-specific information, preferences, or past behaviors increase the sense of individual relevance and encourage greater interaction [29]. However, maintaining consumer engagement remains challenging due to short attention spans and intense competition for user attention. Therefore, marketers must continuously improve and adapt video advertising strategies to keep content engaging and relevant.

### 2.4. Emotional Appeal and Its Effect on Consumer Behavior

Emotional appeal is a key factor influencing advertising effectiveness because emotions shape how consumers perceive, process, and respond to marketing messages [30]. Advertisements that generate strong emotional responses are more likely to attract attention, improve memory retention, and influence consumer decision-making.

In video advertising, emotional appeal is especially important because visual imagery, music, and storytelling can create immersive and emotionally engaging experiences [31]. Positive emotions such as happiness, excitement, and inspiration increase consumer engagement and encourage favorable behaviors, including purchase behavior. Emotional appeal also strengthens the emotional connection between consumers and brands, leading to more positive attitudes and long-term loyalty [32].

The effectiveness of emotional appeal increases when combined with personalization. Personalized advertisements that include emotionally relevant content are more likely to resonate with consumers because they align with both individual preferences and emotional needs [33]. However, emotional content must be carefully designed, as overly intense or irrelevant emotions may create negative reactions and reduce advertising effectiveness.

## 2.5. Research Gap

Despite extensive research on AI, personalization, video advertising, and emotional appeal, important gaps remain in understanding their combined effects on consumer purchase behavior. Most previous studies have examined these factors separately and focused mainly on click-through rates (CTR) or engagement rather than actual purchase behavior [34].

Limited attention has been given to the interaction between emotional appeal and perceived personalization in influencing consumer responses within AI-personalized video advertising. In addition, the moderating role of perceived personalization has not been sufficiently explored, despite its importance in shaping the relationship between emotional appeal and consumer behavior.

Another research gap concerns exposure frequency. Although repeated exposure can improve brand familiarity and recall, its long-term effect on consumer behavior in AI-personalized video advertising remains unclear. Therefore, this study examines the combined effects of AI personalization, emotional appeal, perceived personalization, and exposure frequency on consumer purchase behavior in social media campaigns.

## 2.6. Research Hypotheses

The literature suggests that AI-personalized video advertising enhances consumer engagement by combining personalization, emotional appeal, and contextual relevance. AI technologies enable marketers to deliver tailored advertising content that aligns with consumer preferences, making advertisements more persuasive and effective than traditional approaches. In addition, emotional engagement and perceived personalization influence how consumers respond to advertising stimuli and shape purchase-related behaviors.

Previous studies indicate that personalized advertising improves consumer engagement and decision-making, particularly when delivered through video content [1] [13]. Emotional appeal also plays a major role in influencing consumer attitudes and purchase behavior, especially when advertisements are perceived as personally relevant [6] [17]. Furthermore, repeated exposure to relevant advertisements may strengthen brand familiarity and consumer responses over time [23] [24]. Based on these findings, the following hypotheses are proposed:

### Hypothesis 1

AI-personalized video advertisements significantly enhance consumer purchase behavior compared to non-personalized video advertisements.

### Hypothesis 2

Emotional appeal in AI-personalized video advertisements positively influences consumer purchase behavior.

### Hypothesis 3

Perceived personalization moderates the relationship between emotional appeal and consumer purchase behavior in AI-personalized video advertisements.

### Hypothesis 4

The frequency of exposure to AI-personalized video advertisements positively influences consumer purchase behavior over time.

### 3. Research Design and Methodology

#### 3.1. Research Design

This study adopts a quasi-experimental research design, which is appropriate for examining the effectiveness of AI-personalized video advertising in a controlled yet realistic environment. The design enables a comparative analysis between participants exposed to AI-personalized video advertisements and those exposed to traditional, non-personalized video advertisements. Such an approach allows for the assessment of causal relationships between advertising type and consumer purchase behavior while maintaining ecological validity [25].

The study consists of two primary groups: an experimental group, which is exposed to AI-personalized video advertisements, and a control group, which is exposed to traditional video advertisements. By comparing these two groups, the study aims to isolate the effect of personalization on consumer responses, including emotional engagement, perceived personalization, and purchase behavior.

##### 3.1.1. AI Tools and Data Used for Personalization

The AI-personalized video advertisements used in this study were developed using advanced machine learning techniques and automated video generation tools. Platforms such as Synthesia and Pictory were utilized to create dynamic video content that integrates personalized elements based on individual user data. These tools enable the automated insertion of personalized features such as names, geographic locations, preferences, and behavioral cues into video advertisements.

The personalization process was driven by a dataset collected during the participant recruitment phase. This dataset included demographic variables (e.g., age, gender, location), behavioral data (e.g., social media usage patterns, prior engagement with online advertisements), and psychographic information (e.g., interests, preferences, and lifestyle indicators). A rule-based and machine learning-assisted segmentation model was employed to categorize participants into distinct consumer profiles.

Based on these profiles, tailored video advertisements were generated with variations in script, visuals, and messaging to align with individual preferences. For example, participants interested in fitness received advertisements featuring health-related themes, while those interested in technology were shown ads emphasizing innovation and efficiency. This approach ensured that the personalized advertisements reflected both emotional appeal and contextual relevance, thereby enhancing their potential impact on consumer behavior.

##### 3.1.2. Traditional Ad Control Condition

In the control condition, participants were exposed to non-personalized video advertisements that were designed to match the personalized ads in terms of duration, visual quality, and product category. These advertisements followed a ge-

neric format, delivering standardized messages without incorporating any individual-specific data.

For instance, while personalized advertisements included tailored messages such as “Achieve your goals, [Name], in your city,” the traditional advertisements used neutral statements such as “Achieve your goals today.” This ensured that the primary difference between the two conditions was the presence or absence of personalization.

Both the experimental and control advertisements promoted the same category of products (e.g., lifestyle or digital services) to maintain consistency across conditions. This design allowed for a valid comparison of the impact of personalization on consumer purchase behavior while controlling for external variables.

### 3.2. Sample Selection

Participants were recruited through online platforms, including social media channels (such as Facebook, Instagram, and TikTok) as well as email distribution lists, over a four-week period. The study targeted individuals who are active users of social media platforms, as they represent the primary audience for digital video advertising. To be eligible for participation, respondents were required to be at least 18 years old and have prior experience interacting with online advertisements.

The study included participants from multiple geographic regions, reflecting the global nature of social media usage. The sample was collected using a convenience sampling approach, allowing for the inclusion of participants from diverse demographic backgrounds. Participation in the study was voluntary, and no monetary incentives were provided to respondents. All participants completed the study anonymously.

The study sample consists of 400 participants drawn from diverse demographic backgrounds, including variations in age, gender, education level, and occupation. Participants were recruited through online channels such as social media platforms and email invitations, ensuring that the sample reflects active users of digital media and potential consumers of online advertising.

To enhance the internal validity of the study, participants were randomly assigned to either the experimental group ( $n = 200$ ) or the control group ( $n = 200$ ). Randomization was conducted using an automated assignment feature within the survey platform, minimizing selection bias.

Preliminary statistical tests, including independent samples t-tests and chi-square analyses, were conducted to ensure that there were no significant differences between the two groups in terms of key demographic variables ( $p > 0.05$ ). This confirms that the groups were comparable prior to exposure, thereby strengthening the validity of the experimental comparisons.

### 3.3. Data Collection Techniques

The study employs a mixed-methods approach, combining quantitative and qual-

itative data collection techniques to provide a comprehensive understanding of consumer responses.

### **Quantitative Data**

Quantitative data were collected by a structured online questionnaire administered after participants were exposed to the advertisements. The questionnaire measured key variables including:

- Consumer purchase behavior
- Emotional response
- Perceived personalization
- Overall engagement

Purchase behavior was operationalized using purchase intention and click-through behavior, as no direct transaction data were collected.

Additionally, behavioral data such as click-through actions (e.g., whether participants clicked on the advertisement) were recorded to provide objective measures of engagement.

### **Qualitative Data**

The qualitative component of this study was designed to complement the quantitative findings by providing deeper insights into participants' perceptions of AI-personalized video advertisements. Open-ended responses were collected from all participants following ad exposure. Out of 400 total responses, 372 valid responses were retained for analysis after excluding incomplete or irrelevant entries.

The qualitative data were analyzed using thematic analysis, following the six-phase framework proposed by Braun and Clarke [27]. This method is widely used in mixed-methods research for identifying, analyzing, and interpreting patterns within textual data [26]. The analysis began with data familiarization, followed by initial coding of meaningful segments related to perceived personalization, emotional engagement, and overall advertising effectiveness. These codes were then systematically grouped into broader themes that reflect recurring patterns in consumer perceptions.

To enhance the reliability and validity of the analysis, a second independent reviewer evaluated a subset of the coded data. Inter-coder consistency was assessed through comparison and discussion of coding decisions, and any discrepancies were resolved through consensus. This process ensured the robustness and credibility of the thematic structure.

The use of qualitative analysis in this study provides rich contextual insights into how consumers interpret personalized advertising, supporting the quantitative findings and offering a more comprehensive understanding of consumer behavior in digital marketing environments [26].

### **Exposure Frequency Design**

To examine the potential effects of repeated exposure, participants in the experimental group were shown three AI-personalized video advertisements over three consecutive days. Each advertisement retained core personalized elements while incorporating slight variations in messaging and visuals to maintain engage-

ment. In contrast, participants in the control group were exposed to a single non-personalized advertisement.

While this design allows for the observation of cumulative engagement effects in the personalized condition, it also introduces a potential confounding factor between personalization and exposure frequency. As a result, the observed differences between groups may reflect the combined influence of both personalization and repeated exposure rather than personalization alone. This limitation is acknowledged and addressed in the interpretation of results.

### 3.4. Instrumentation

The measurement instrument was developed based on established scales from previous research to ensure reliability and validity. The questionnaire utilized a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree) to assess participants' responses.

Key constructs measured include:

- Emotional response (e.g., excitement, enjoyment)
- Perceived personalization
- Purchase behavior
- Attitude toward the advertisement

The instrument was pre-tested through a pilot study involving a small sample of participants to ensure clarity and consistency. Reliability analysis indicated that all constructs achieved acceptable Cronbach's alpha values (above 0.70), confirming internal consistency [28] [29].

#### Emotional Appeal Design

Emotional appeal in the personalized advertisements was operationalized using three primary emotional themes: aspiration, belonging, and personal recognition. These themes were embedded into the video content through narrative storytelling, visual elements, and personalized messaging.

For example:

Aspirational messages emphasized personal growth and achievement.

Belonging-focused content highlighted social connection and inclusion.

Recognition-based elements incorporated user-specific details such as names or interests.

These emotional components were integrated using AI tools to ensure consistency while maintaining personalization. A pilot test confirmed that the emotional content was effective in eliciting the intended responses before full-scale implementation.

### 3.5. Statistical Analysis

Data analysis was conducted using statistical software such as SPSS. The analysis involved both descriptive and inferential statistical techniques.

Descriptive statistics were used to summarize demographic characteristics and key variables.

Independent samples t-tests were conducted to compare differences between experimental and control groups.

ANOVA was used to examine differences across demographic groups.

Regression analysis was performed to test the moderating effect of perceived personalization.

Mediation analysis was conducted to assess the role of emotional response in influencing purchase behavior.

These analytical techniques provide a comprehensive evaluation of the relationships among the study variables [30] [31].

### 3.6. Ethical Considerations

Ethical considerations were carefully addressed throughout the research process. Participants were informed about the purpose of the study and provided their consent before participation. They were assured that their responses would remain confidential and used solely for academic purposes.

Participants were also given the option to withdraw from the study at any time without penalty. All procedures were conducted in accordance with established ethical guidelines for research involving human participants [32].

### 3.7. Limitations

Despite its contributions, this study has several limitations that should be acknowledged. First, the use of self-reported data may introduce bias in measuring emotional response and purchase behavior. Second, the quasi-experimental design may limit the ability to establish definitive causal relationships among variables.

The study focuses primarily on social media users, which may affect the generalizability of the findings to other contexts. Future research could address these limitations by employing longitudinal designs and incorporating additional variables to provide a more comprehensive understanding of consumer behavior [31] [33].

Another limitation of this study relates to the difference in exposure frequency between experimental conditions. Participants in the personalized advertising group were exposed to multiple advertisements, while those in the control group viewed only a single advertisement. This introduces a potential confounding effect, making it difficult to fully isolate the impact of personalization from the effects of repeated exposure. Future research should control for exposure frequency across conditions or adopt a factorial design to independently examine the effects of personalization and repetition.

## 4. Data Analysis

### 4.1. Sample Characteristics

A total of 400 participants were included in the study, representing a diverse demographic distribution in terms of gender, age, and educational background. The

sample was evenly split between male (50%) and female (50%) participants, ensuring gender balance.

In terms of age distribution, 32% of participants were aged between 18 and 24, 28% between 25 and 34, while the remaining 40% were equally divided between the 35 - 44 and 45+ age groups. Regarding educational background, the majority of participants held a Bachelor's degree (50%), followed by Master's degree holders (27.5%), high school graduates (17.5%), and a small proportion with Doctoral qualifications (5%).

This diversity enhances the generalizability of the findings and ensures that the results reflect a broad spectrum of consumer behavior patterns. The demographic characteristics of the participants are presented in **Table 1**.

**Table 1.** Demographic characteristics of participants.

| Demographic Variable   | Category          | Frequency | Percentage (%) |
|------------------------|-------------------|-----------|----------------|
| Gender                 | Male              | 200       | 50.0           |
|                        | Female            | 200       | 50.0           |
| Age Group              | 18 - 24 years     | 128       | 32.0           |
|                        | 25 - 34 years     | 112       | 28.0           |
|                        | 35 - 44 years     | 80        | 20.0           |
|                        | 45+ years         | 80        | 20.0           |
| Educational Background | High School       | 70        | 17.5           |
|                        | Bachelor's Degree | 200       | 50.0           |
|                        | Master's Degree   | 110       | 27.5           |

## 4.2. Manipulation Check

A manipulation check was conducted to verify whether participants in the experimental group perceived the advertisements as more personalized and relevant compared to those in the control group. Perceived personalization was used as a proxy measure for personalization, as it reflects the extent to which the advertisement aligns with individual preferences and interests.

An independent samples t-test was performed to compare perceived personalization between the two groups. The results indicated that participants exposed to AI-personalized video advertisements reported significantly higher perceived personalization ( $M = 4.3$ ,  $SD = 0.5$ ) than those exposed to traditional non-personalized advertisements ( $M = 3.0$ ,  $SD = 0.6$ ), ( $t(398) = 7.85$ ,  $p < 0.001$ ).

This result confirms that the personalization manipulation was successful, as participants in the experimental condition clearly perceived the advertisements as more relevant and tailored to their preferences. Therefore, the observed differences in purchase behavior and emotional response can be more confidently attributed to the effects of AI-driven personalization rather than to general differences in advertisement content.

### 4.3. Purchase Behavior Analysis

The analysis revealed a significant difference in consumer purchase behavior between participants exposed to AI-personalized video advertisements and those exposed to traditional advertisements.

Participants in the experimental group reported a higher average purchase behavior score of 4.2, compared to 2.8 in the control group. The comparison of purchase behavior between the two groups is shown in **Table 2**. An independent samples t-test confirmed that this difference was statistically significant ( $t(398) = 8.15$ ,  $p < 0.001$ ).

This finding provides strong support for Hypothesis 1, although the effect may partially reflect the influence of repeated exposure, indicating that AI-personalized video advertisements are significantly more effective in influencing consumer purchase behavior. The higher scores suggest that personalization enhances consumers' willingness to consider and purchase advertised products.

**Table 2.** Purchase behavior comparison.

| Ad Type                       | Average purchase behavior | Standard Deviation |
|-------------------------------|---------------------------|--------------------|
| Personalized AI-generated Ads | 4.2                       | 0.6                |
| Traditional Ads               | 2.8                       | 0.7                |

### 4.4. Emotional Response and Purchase Behavior

Further analysis examined the relationship between emotional response and consumer purchase behavior. The results indicate that participants exposed to personalized advertisements reported significantly higher emotional engagement (mean = 4.4) compared to those exposed to traditional advertisements (mean = 2.9). The emotional response ratings for both groups are presented in **Table 3**.

A correlation analysis revealed a strong positive relationship between emotional response and purchase behavior ( $r = 0.68$ ,  $p < 0.001$ ), indicating that higher emotional engagement leads to stronger purchase behavior.

These findings support Hypothesis 2, emphasizing the critical role of emotional appeal in influencing consumer decision-making.

**Table 3.** Emotional response ratings.

| Ad Type                       | Average Emotional Response | Standard Deviation |
|-------------------------------|----------------------------|--------------------|
| Personalized AI-generated Ads | 4.4                        | 0.5                |
| Traditional Ads               | 2.9                        | 0.6                |

A mediation analysis was conducted to examine whether emotional response mediates the relationship between AI-personalized advertising and purchase behavior. The analysis was performed using a bootstrapping approach with 5000 resamples.

The results revealed a significant indirect effect of AI-personalized advertising

on purchase behavior through emotional response (indirect effect = 0.34, 95% CI [0.22, 0.46]). Since the confidence interval does not include zero, the mediating effect is supported. This indicates that emotional engagement serves as a key mechanism through which personalized advertising influences consumer purchase behavior.

#### 4.5. Moderating Effects of Perceived Personalization

A regression analysis was conducted to examine the moderating role of perceived personalization in the relationship between emotional response and purchase behavior. The results indicate that perceived personalization significantly strengthens this relationship.

Participants who rated advertisements as highly relevant (scores of 4 - 5) demonstrated an average purchase behavior of 4.6, compared to 3.2 for moderate relevance and 2.4 for low relevance. The relationship between perceived personalization and purchase behavior is shown in **Table 4**.

These findings confirm Hypothesis 3, highlighting that perceived personalization enhances the effectiveness of emotional appeal in driving purchase behavior.

To further examine the moderating effect, a regression analysis including an interaction term between emotional response and perceived personalization was conducted. The results indicate that the interaction term was statistically significant ( $\beta = 0.31$ ,  $p < 0.001$ ), confirming that perceived personalization strengthens the relationship between emotional response and purchase behavior.

The overall regression model was significant and explained a substantial proportion of variance in purchase behavior ( $R^2 = 0.47$ ,  $F(3, 396) = 116.90$ ,  $p < 0.001$ ). These findings provide strong support for Hypothesis 3.

**Table 4.** Purchase behavior based on perceived personalization levels.

| Relevance Level (1 - 5) | Average purchase behavior |
|-------------------------|---------------------------|
| Low (1 - 2)             | 2.4                       |
| Moderate (3)            | 3.2                       |
| High (4 - 5)            | 4.6                       |

#### 4.6. Influence of Demographic Factors on Purchase Behavior

An ANOVA test was conducted to examine differences in purchase behavior across age groups. The results indicate that younger participants (18 - 24 years) exhibited the highest purchase behavior (4.5) in response to personalized advertisements, while older participants (45+ years) showed relatively lower purchase behavior (3.5). The comparison across age groups is presented in **Table 5**.

This suggests that younger consumers are more receptive to AI-personalized advertising, possibly due to greater familiarity with digital technologies and social media platforms.

These findings reinforce the importance of demographic segmentation in advertising strategies and support the need for tailored marketing approaches.

**Table 5.** Purchase behavior analysis by age group.

| Age Group | Personalized Ads (Mean) | Traditional Ads (Mean) |
|-----------|-------------------------|------------------------|
| 18 - 24   | 4.5                     | 2.5                    |
| 25 - 34   | 4.3                     | 2.8                    |
| 35 - 44   | 4.0                     | 3.0                    |
| 45+       | 3.5                     | 3.2                    |

#### 4.7. Effect of Exposure Frequency on Purchase Intention

To examine the effect of repeated exposure on consumer purchase intention, a one-way ANOVA was conducted comparing responses across exposure instances within the experimental group. The results indicate a significant increase in purchase intention over repeated exposures ( $F(2, 597) = 12.45, p < 0.01$ ).

Participants exposed to multiple personalized advertisements demonstrated progressively higher purchase intention scores, suggesting that repeated exposure reinforces consumer engagement and strengthens behavioral responses. These findings provide support for Hypothesis 4, although the effect should be interpreted with caution due to the confounding influence of personalization and exposure frequency.

#### 4.8. Qualitative Feedback

Qualitative analysis of participants' responses revealed several key themes regarding perceptions of AI-personalized video advertisements. The findings were derived from 372 valid responses and analyzed using thematic analysis. The dominant themes identified include perceived personalization, emotional connection, and comparative effectiveness of personalized versus traditional advertisements.

A dominant theme was perceived personalization, with many participants stating that personalized ads felt more aligned with their interests and needs. Respondents frequently mentioned that such ads appeared "more useful" and "more meaningful" compared to generic advertisements. For example, one participant noted, "The ad felt like it was made specifically for me, which made me more interested in the product."

Another key theme was emotional connection, as participants reported feeling more engaged and understood when advertisements included personalized elements. Emotional storytelling was particularly effective in creating positive impressions and influencing purchase behaviors. As one respondent explained, "The personalized message made me feel understood, which increased my willingness to consider the product."

In contrast, traditional advertisements were often described as "generic", "repetitive", and "less engaging", leading to lower levels of interest and purchase behavior. This contrast is reflected in participant feedback such as, "Compared to other ads, this one was more relevant to my needs and caught my attention".

These qualitative insights support the quantitative findings, demonstrating that

personalization and emotional appeal play a crucial role in shaping consumer purchase behavior.

## 5. Discussion

The findings demonstrate that AI-personalized video advertising significantly influences consumer purchase behavior in social media campaigns. Participants exposed to personalized advertisements reported higher purchase behavior and emotional engagement than those exposed to traditional advertisements, supporting the effectiveness of AI-driven personalization in digital marketing.

The results also confirm the importance of emotional appeal in advertising effectiveness. Personalized advertisements generated stronger emotional responses, which were positively associated with purchase behavior. This suggests that emotionally engaging and personally relevant content strengthens consumer-brand connections and improves advertising outcomes [6] [17].

Perceived personalization was found to strengthen the relationship between emotional response and purchase behavior. Advertisements perceived as highly relevant produced stronger consumer responses, highlighting the importance of aligning advertising content with consumer preferences and contextual needs. These findings support information-processing theories, which suggest that relevant information receives greater attention and influences consumer decisions more effectively [21] [22].

The analysis additionally showed that younger consumers responded more positively to AI-personalized advertising than older consumers, emphasizing the importance of demographic segmentation in digital marketing strategies.

Despite these contributions, the study has several limitations. The use of self-reported measures may introduce response bias, and the quasi-experimental design limits the ability to establish definitive causality. In addition, differences in exposure frequency between groups may have influenced the observed effects. Future research should employ longitudinal designs, objective behavioral measures, and controlled exposure conditions to further examine the long-term effectiveness of AI-personalized advertising.

## 6. Summary of Findings

The study found that AI-personalized video advertisements significantly improve consumer purchase behavior compared to traditional advertisements, supporting Hypothesis 1. Personalized advertisements also generated higher emotional engagement, confirming the importance of emotional appeal in influencing consumer behavior and supporting Hypothesis 2.

The findings further revealed that perceived personalization strengthens the relationship between emotional response and purchase behavior, supporting Hypothesis 3. Participants who perceived advertisements as highly relevant demonstrated stronger purchase behavior than those who perceived them as less relevant.

In addition, repeated exposure to personalized advertisements increased pur-

chase intention over time, providing support for Hypothesis 4. Demographic analysis showed that younger consumers were more responsive to AI-personalized advertising than older consumers.

Qualitative feedback reinforced the quantitative findings, as participants described personalized advertisements as more relevant, engaging, and emotionally meaningful than traditional advertisements.

## 7. Implications for Marketing Strategies

Based on the findings of this study, several important implications can be derived for marketers seeking to enhance the effectiveness of their digital advertising strategies, particularly in the context of AI-personalized video advertising.

### 1) Prioritizing Personalization

The significantly higher purchase behavior observed in response to AI-personalized video advertisements underscores the importance of prioritizing personalization in modern marketing strategies. Marketers should leverage consumer data, including demographic, behavioral, and psychographic information, to create highly tailored advertising content that aligns with individual preferences.

Advanced technologies such as artificial intelligence and machine learning enable real-time personalization, allowing marketers to deliver the right message to the right audience at the right time. By doing so, brands can enhance the relevance of their advertisements, increase consumer engagement, and ultimately drive higher conversion rates. This approach is particularly crucial in digital environments where consumers are frequently exposed to large volumes of competing content [35].

### 2) Emphasizing Emotional Engagement

The findings highlight the critical role of emotional appeal in influencing consumer purchase behavior. Advertisements that evoke strong emotional responses such as excitement, inspiration, or a sense of belonging are more likely to capture attention and create lasting impressions.

Marketers should incorporate emotional storytelling into their video advertising strategies, using compelling narratives, visuals, and music to connect with consumers on a deeper level. When combined with personalization, emotional engagement becomes even more powerful, as consumers are more likely to respond positively to content that feels both meaningful and personally relevant. This emotional connection not only drives immediate purchase behavior but also fosters long-term brand loyalty [36].

### 3) Optimizing Perceived personalization

Perceived personalization was identified as a key factor influencing the effectiveness of advertising. Therefore, marketers must ensure that their advertisements are not only personalized but also contextually relevant to the target audience.

This can be achieved by continuously analyzing consumer data and adapting advertising content to reflect current preferences, behaviors, and situational con-

texts. Real-time data analytics and feedback mechanisms can help marketers refine their strategies and maintain high levels of relevance over time.

Additionally, marketers should avoid over-personalization that may be perceived as intrusive, as this could negatively impact consumer trust. Striking a balance between personalization and privacy is essential for sustaining positive consumer relationships and maximizing the effectiveness of advertising campaigns [37].

## 8. Conclusions

This study examined the influence of AI-personalized video advertising on consumer purchase behavior in social media campaigns. The findings demonstrate that AI-driven personalization significantly enhances consumer engagement and purchase behavior compared to traditional advertising formats.

The results highlight the importance of emotional appeal and perceived personalization in shaping consumer responses. Advertisements that are emotionally engaging and personally relevant were found to be the most effective in influencing purchase behavior. The study also showed that younger consumers are generally more responsive to personalized advertising strategies.

Overall, the findings suggest that integrating AI-driven personalization with emotional storytelling can improve the effectiveness of digital advertising campaigns and strengthen consumer-brand relationships. Despite limitations related to self-reported data and the quasi-experimental design, the study contributes to the growing literature on AI in marketing and provides practical insights for optimizing social media advertising strategies.

## Conflicts of Interest

The author declares no conflicts of interest.

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