
Cultural Differences in Perception and Engagement of AI-Generated Online Ads

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ABSTRACT

This study examines cultural differences in the perception of AI-generated Instagram advertisements between 75 Colombian and 41 Austrian participants. Ads were created using GPT-4 and DALL-E 3 and evaluated based on visual appeal, message clarity, trustworthiness, relevance, and engagement. Results indicate that Colombians found the ads more visually appealing and engaging than Austrians, especially in culturally relevant contexts like skiing and Alpine hotels. Both groups rated clarity and credibility similarly, regardless of cultural context. The study highlights limitations in AI models regarding text-visual integration and overuse of specific terms, suggesting future improvements by integrating text and image generation for enhanced coherence. The findings offer valuable cross-cultural insights, though broader studies with more diverse samples are recommended for a deeper understanding of AI-generated advertising across cultures.

Keywords: Generative AI, Online ads, Cultural differences

INTRODUCTION

The integration of artificial intelligence tools in various industries has become widespread, and the marketing landscape is no exception. Artificial intelligence technologies present new opportunities for creativity and efficiency in advertising campaigns, allowing marketers to produce dynamic and personalized content. However, these advances also introduce challenges that need further exploration, particularly regarding audience engagement and cultural perception.

This paper explores the influence of AI-generated ads on audience engagement, focusing on how transformer (Vaswani, 2017), based language models (Yao, 2024), like GPT-4 (Brown, 2020; Achiam, 2023), and diffusion models (Croitoru, 2023), like DALL-E impact visual perception and engagement in advertising. While AI offers significant potential to streamline the creative process and deliver relatable content, questions remain about how effectively these ads align in different cultural contexts. Further research is necessary to fully understand AI's capacity to engage various audiences, merge text and images, and captivate attention. This is especially important as businesses depend more on AI to enhance their marketing tactics.

This study compares Colombian and Austrian participants' responses to AI-generated Instagram ads to understand cultural differences in how they perceive and interact with these ads. Through this analysis, the article aims to

provide insight into the broader implications of AI in marketing, emphasizing how cultural context influences visual appeal, engagement, and relevance.

IMPLEMENTATION OF THE AI-POWERED AD GENERATOR

The AI-powered Instagram ad generator was developed to automate the production of advertising using the GPT-4 and DALL-E 3 models. The creation was divided into two sections: one used GPT-4 to generate the text, and the other used DALL-E 3 to create the accompanying image. GPT-4 produced the prompt for the images, ensuring that the components in the advertisements were oriented correctly.

The system made it easier to create ad campaigns quickly by enabling the production of written and graphic content that was targeted to meet marketing objectives.

To enhance the targeting and personalizing of advertisements, a persona generator was added to create basic user profiles. The target group profiles were produced considering hobbies and interests.

In general, the app produced campaigns for multiple target groups under a single.

STUDY DESIGN OF AI-GENERATED ADS

The study was designed to evaluate how AI-generated ads resonate with culturally diverse audiences. Specifically, it aimed to explore the influence of AI-generated content on user perception and engagement, focusing on two distinct cultural groups: Colombians and Austrians.

The evaluation process was conducted through a custom-built application divided into three parts. The first section collected demographic information and participant interests, using the same list employed to create the target group profiles. The second section presented both AI-generated and human-created/assisted ads (labeled as “real” for simplicity), asking participants to differentiate between the two. This was followed by a structured questionnaire designed to evaluate their perceptions of the ads. The questionnaire, adapted from previous studies on originality (Lavie, 2004; Vera and Espinosa, 2019), liking (Yoon and Lee, 2022; MacKenzie, 1989), and irritation (Pelet and Ettis, 2022), included both closed and open-ended questions designed to measure factors such as clarity, credibility, visual appeal, relevance, attention capture, interaction likelihood, and overall quality. Participants rated these aspects on a 5-point scale, and additional questions were provided to capture qualitative feedback on emotional responses and ad interaction likelihood. The app supported multiple languages, including Spanish and German, to ensure accessibility for both target groups.

For this study, five distinct products were chosen, and ads were created for each, crafted to different personas. This process resulted in 25 ads (5 products x 5 personas), which were shown to the participants based on their selected interests. A subset of 2 ads specifically related to Austrian culture, skiing,

and hotels in the Alps (see Figure 1) were included to examine culturally significant content alongside the general ads.

RESULTS

75 answers were received from the Colombian public and 41 from Austrians. As for the ability to differentiate between AI-generated ads and Real Ads, 12 ads were tested, 5 of which were generated with the proposed tool. To minimize the bias in the evaluation, slight modifications were made to hide brand names and logos.

Ads Classifications

A ROC Curve analysis (Metz, 1978) was used to measure the ability of the participants to determine the origin of the advertisement for the second part of the study. The analysis revealed that Colombians had a moderate ability to distinguish between AI-generated and real ads, with an Area Under the Curve (AUC) of 0.657, showing some difficulty in identifying the source of the content. Austrians, on the other hand, performed better in differentiating between the two, with an AUC of 0.757, showing a greater ability to recognize AI-generated content. These findings suggest that differences in culture may influence the ability to detect subtle indicators in AI-generated content, with Austrians being more sensitive to such distinctions, possibly due to their greater familiarity with the advertised items.

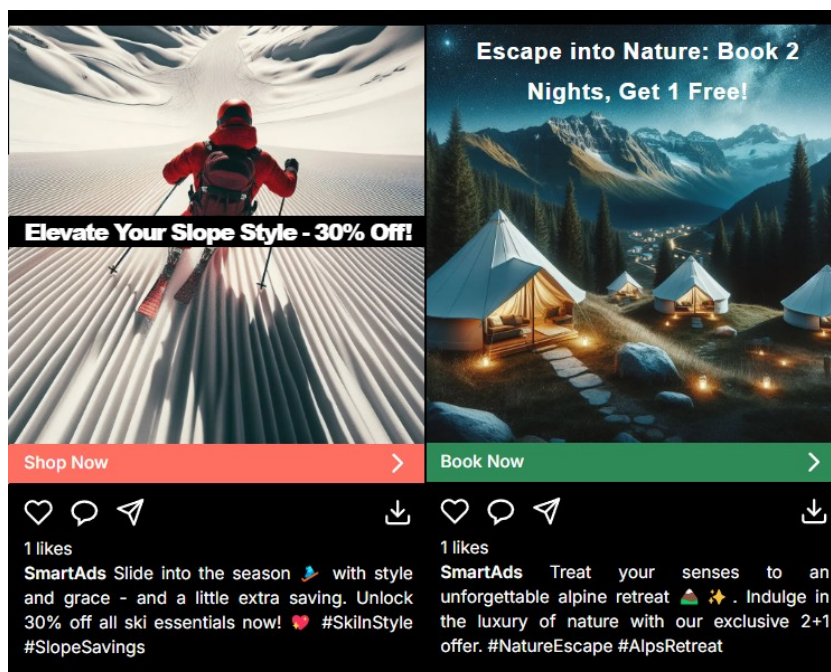


Figure 1: Sample of the generated Ads that feature the Alps culture.

Evaluating the Questionnaire

A T-test was conducted on the answers to each question in the questionnaire. On a general basis (including all ads) and additionally, a separate analysis focused exclusively on ads related to “Skiing” and a “Hotel in the Alps.” This was done to see if filtering for elements that are culturally significant to Austrians would yield significant differences in responses (see Table 1).

Across all ads, visual appeal ($p = 0.008$) and attention capture ($p = 0.005$) were statistically significant, suggesting that these two factors were perceived differently by Colombian and Austrian participants. This indicates that cultural differences might play a role in how visually appealing and attention-grabbing an ad is.

When analyzing the culturally relevant Ski and Alpine Hotels ads only, the differences became even more pronounced. Visual appeal ($p = 0.00001$), attention capture ($p = 0.003$), and overall quality ($p = 0.005$) were all statistically significant. This implies that cultural context has a greater impact when ads appeal to the distinctive culture of one group, in this case, Austrians. Austrian participants evaluated these advertising more critically in terms of visual appeal and attention grab, most likely due to prior familiarity with these components or frequent exposure to similar ads. However, there were no significant variations in clarity, credibility, or relevance between the general and filtered analyses, implying that these variables were assessed equally across cultures.

Table 1. T-test results using all data and using exclusively the Alps related ads.

Factor	T-Test Using All Ads		T-Test Using Only Ski and Alpine Hotels	
	p-value	Significant	p-value	Significant
Clarity	0.564	False	0.663	False
Credibility	0.906	False	0.278	False
Visual Appeal	0.008	True	0.00001	True
Relevance	0.887	False	0.869	False
Attention Capture	0.005	True	0.003	True
Interaction Likelihood	0.006	True	0.855	False
Overall Quality	0.758	False	0.005	True

Interestingly, while overall quality did not show a significant difference across all ads, the filtered analysis for culturally specific ads revealed a notable difference. Colombians gave the ads a better overall quality rating than Austrians. This implies that Colombians preferred the culturally relevant ads, even though they were more closely tied to Austrian culture.

To further analyze the data, the relevant factors for the culturally filtered data were processed and examined using statistical distribution analysis to establish whether each culture has a good or **negative** perspective toward the ads (see Table 2).

Table 2. Average scores of the most relevant factors for Colombians and Austrians.

Factor	Colombians Average Rate	Austrians Average Rate
Visual Appeal	3.25	1.87
Attention Capture	3.15	1.97
Interaction Likelihood	2.38	2.1
Overall Quality	3.28	2.53

The findings show that Colombians evaluated the advertising higher than Austrians on every listed factor. This shows that Colombians may be captivated by these ads, given the fact that they are set in a culturally foreign location.

There are several proposed explanations for this, starting with curiosity and novelty. The ads' content (about the Alps, skiing, and snow) could capture Colombians' interest. The concept may make the images more visually appealing and interesting for viewers, resulting in greater ratings.

Additionally, Colombians might view the ads as images of experiences they expect to have in the future, such as visiting a snow-covered area like the Alps. This could increase their interest in the ads, resulting in more positive ratings.

Finally, unlike Austrians, who are better familiar with the visual setting and scenery of the Alps, Colombians may be unsure of what to expect in this environment. Due to their lack of knowledge, they can be more receptive to the ads' content because they lack the Austrians' potential critical viewpoint. Austrians, on the other hand, may have a more realistic perspective of the advertisements, considering them to be ordinary or uninteresting, given their cultural familiarity with the Alps and skiing. Because the content doesn't offer consumers anything new or intriguing, this familiarity may cause them to give the ads a lower engagement and interaction likelihood rating.

DISCUSSION

The results reveal significant cultural differences in how Colombians and Austrians perceive advertising content, particularly ads related to skiing and alpine hotels. T-test results indicated that visual appeal and attention-grabbing were statistically significant across all ads, suggesting that cultural factors influence the effectiveness of these elements. This was even more pronounced when focusing specifically on culturally relevant ads, where visual appeal, attention grab, and overall quality exhibited strong statistical significance. These findings imply that cultural resonance plays a critical role in how advertisements are perceived, and Austrians are likely to apply a more critical lens due to their familiarity with the Alpine lifestyle and landscape.

Although overall evaluations for all commercials showed no variation, a filtered analysis indicated that Colombians evaluated culturally specialized advertisements more favorably than Austrians. This shows that the Colombian participants may have been more interested due to a sense of curiosity and novelty toward the foreign landscape. In contrast, Austrians, with prior knowledge and experience in the Alps, appeared to examine the

ads more critically, judging them less appealing due to their familiarity with the content.

Furthermore, the average scores for crucial factors such as visual appeal, attention grab, and interaction likelihood back up this result. Colombians scored better on all key factors indicating a higher possibility of engaging with the ads. This reaction can be attributed to a variety of reasons, such as the attraction of discovering another culture and the prospect of travel. Austrians, on the other hand, may react slightly differently to the advertisements due to their extensive knowledge of the Alpine landscape.

Qualitative insights also revealed that participants frequently found ads visually messy and inconsistent, pointing to a critical area where AI needs to improve to create more cohesive and compelling ad campaigns. These findings directly addressed the limitations of AI models like GPT-4 and DALL-E in creating ads that are both cohesive and compelling. The difficulty in aligning text with visuals, particularly in complex scenes, was identified as a significant challenge. Also, it was observed that certain ads consistently received feedback describing them as “fake” or “artificial,” suggesting that specific design elements repeatedly failed to convince the audience of their authenticity.

In general, while AI models demonstrated the potential to create visually appealing and engaging ads, the study identified key areas where these technologies still require enhancement to fully achieve notable goals in digital marketing. The results suggest that ongoing development and human intervention are essential to overcome the current limitations facing AI-generated content. The generated tool is considered not ready to be used outside the academic environment, businesses will hardly find it as an effective solution for targeted advertising.

LIMITATIONS

The study was constrained by the capabilities of the AI models used, specifically

GPT-4 and DALL-E 3. These models, while advanced, still have limitations in fully understanding and replicating human creativity, particularly in areas such as appropriate design (in managing color schemes, spatial layout, cognitive overload, and overall design coherence) and cultural references. The lack of interaction between the text generation and image generation phases is a limitation that often results in inconsistencies between the content and visuals. The overuse of certain words in the caption or over-image text is a constraint that the model has. It sticks to words like “Enhance,” and “Elevate,” no matter the product or service, which deteriorates the quality of the final output.

CONCLUSION

Cultural differences significantly shape how advertisements are perceived, with Colombians responding more positively to ads featuring unfamiliar, exotic settings like the Alps, whereas Austrians, who are more familiar with

this environment, viewed the images more critically. The contrast shows how the introduction of new things/places and curiosity can generate an increased appeal of ads, especially when they trigger expectations, such as travel. Colombians were more likely to engage with the ads based on the data gathered, indicating that foreign, exotic information attracts their attention more effectively.

Despite the potential of AI-generated ads, there were some criticisms from the participants that highlighted areas of improvement. There were some visual inconsistencies and a lack of cohesion between the image and overlaying text. Some ads were consistently described as “fake” by participants from both cultures, indicating that there are elements in the generated images that give a clear idea of the artificial nature of the ad, which negatively impacted their overall rating. While the AI models used showed promise in creating content for ads, there is still a lack of special awareness and coherence in design. As a result, human intervention is essential to address gaps in areas like layout, color contrast, and overall composition, and this last one includes the iteration of text and images.

Further research is required to improve AI's capabilities in generating culturally resonant and effective advertisements. As AI models evolve, the integration of better design logic and cultural understanding will be crucial to making these tools more useful in real-world marketing scenarios. Ongoing development and testing, particularly in cross-cultural contexts, will help AI models achieve their full potential in digital advertising.

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