Research on the Influence of User Acceptance Willingness for AI-Generated Ads: A Perspective Based on Perceived Eeriness

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Abstract. Based on the uncanny valley theory, this study uses the scenario experiment method to explore user acceptance willingness toward AI-generated advertisements and its influence mechanism, and analyzes the roles of perceived eeriness, perceived trust, and perceived effort in this process. The study finds that perceived eeriness has a significant negative impact on user acceptance willingness toward AI-generated advertisements, while perceived trust and perceived effort play a mediating role between perceived eeriness and user acceptance willingness. This study provides a theoretical basis and practical implications for advertising practitioners and technology developers to optimize advertising design.

Keywords: AI-generated advertisements, user acceptance willingness, perceived eeriness, perceive trust, perceived effort.

1. Introduction

With the rapid development of artificial intelligence (AI), the operation and marketing models of enterprises have undergone continuous innovation, and data-driven AI technology has become an important tool for marketing empowerment [1], enabling the advertising industry to embrace intelligence in production and creation [2]. Although AI technology has improved the efficiency and personalization of advertising creation [3], users still have a certain degree of resistance to AI-generated content in advertisements [4]. AI-generated content may trigger users' negative perceptions due to the uncanny valley effect, induce users' perceived eeriness, and weaken their perceived trust [5]. Moreover, AI-generated advertisements may make users feel that merchants use this technology to cut costs and lack sincere creative effort, thereby affecting user acceptance willingness of the advertisements.

Currently, the academic community has conducted extensive research on the application of AI technology in the advertising industry. Nevertheless, empirical research focusing on users' attitudes toward AI-generated advertisements remains relatively limited, and its internal influence mechanism still requires in-depth investigation. In view of this, based on the uncanny valley theory, this study will adopt the scenario experiment method to explore the actual existence of the uncanny valley effect in AI-generated advertisements and how perceived eeriness affects users' perceptions and acceptance willingness.

2. Literature Review and Research Hypotheses

2.1. Uncanny Valley Theory

The research in this paper is grounded in the "Uncanny Valley" theory. The core of this theory lies in revealing the changing patterns of human emotional responses to robots or anthropomorphic entities [6]. Specifically, when a robot or virtual character closely resembles humans in appearance and behavior but is not entirely identical, it can trigger negative emotional reactions in humans, resulting in the "Uncanny Valley" effect.

The Uncanny Valley effect has been widely employed in studies exploring the relationships between user perception, human emotional responses, and attitudes. Perceived eeriness, a concrete manifestation of the Uncanny Valley effect, refers to the sense of unease and fear that people may

experience when viewing AI-generated objects [7]. Therefore, based on the Uncanny Valley theory, this study investigates the influencing mechanism of perceived eeriness on user acceptance willingness of the AI-generated advertisements.

2.2. The Impact of Perceived Eeriness on Users' Acceptance Willingness

In the context of advertising and marketing, the use of AI for ad creation may trigger users' perceived eeriness. This perceived eeriness could stem from cognitive dissonance regarding the appearance and behavior of AI-created images, or from the over-high expectations aroused by anthropomorphic appearances [8]. As a machine entity, AI is generally considered suitable for mechanical tasks but less capable of handling tasks that require human-exclusive abilities such as individual judgment and emotional expression [9]. When AI images in advertisements exhibit human-like characteristics, such negative preconceived notions often evoke a sense of dissonance or eeriness, undermining users' appreciation of AI-generated works [7]. Based on this, the following hypothesis is proposed in this paper:

H1: Perceived eeriness has a significantly negative impact on user acceptance willingness of the AI-generated advertisements.

2.3. The Mediating Roles of Perceived Trust and Perceived Effort

Perceived trust is a subjective belief perception of users, representing a psychological or behavioral response to the external world generated by an individual due to external stimuli or the perception of certain traits of the subject itself [10]. In this paper, perceived trust refers to the degree of trust and identification that users have towards AI-generated advertisements and the products featured in them. Some scholars have regarded perceived trust as a mediating variable influencing users' acceptance of advertisements and explored, from a mediating perspective, how users' perceived trust affects their attitudes towards advertisements [11].

Perceived effort serves as a cue for evaluating advertising quality, as users often associate a higher level of perceived effort with better quality [12]. Generally, people tend to believe that handmade products involve more effort compared to machine-made ones, leading to a higher perceived value [13]. Based on the aforementioned relevant research, it can be inferred that when effort is perceived by users, it will evoke a more positive attitude in them. Based on the above analysis, the following hypotheses are proposed:

H2: Perceived trust plays a mediating role between perceived eeriness and user acceptance willingness of the AI-generated advertisements.

H3: Perceived effort plays a mediating role between perceived eeriness and user acceptance willingness of the AI-generated advertisements.

To sum up, the specific model constructed in this study is illustrated in Figure 1.

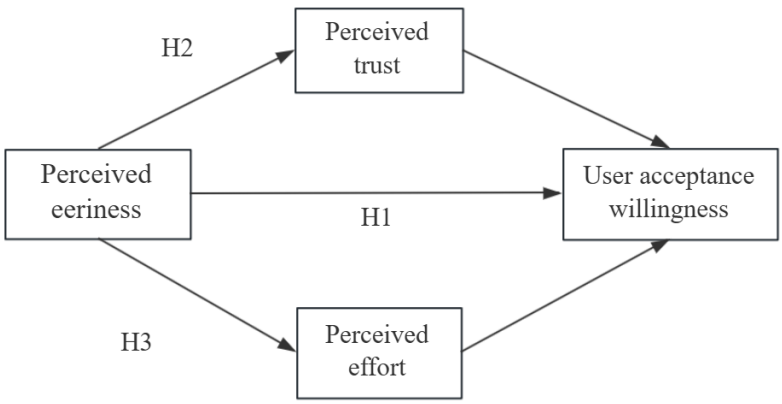

Figure 1. Research Model and Hypotheses

3. Research Design

3.1. Variable Measurement

All variables in this study were measured using a 7-point Likert scale (where 1 indicates "strongly disagree" and 7 indicates "strongly agree"). The measurement items drew on scales developed by Ho, Wongkitrungrueng, Mohr, and Venkatesh, among others [14,15,16,17]. There are 14 measurement items in total, including statements such as "This advertisement looks eerie to me," "I believe the product in this advertisement is reliable," "I think a great deal of effort went into the design of this advertisement," and "I would consider purchasing the product featured in this advertisement."

3.2. Data Collection

This study conducted data collection on the Credamo platform (https://www.credamo.com) from May 26 to June 10, 2025. A single-factor between-group experimental design was adopted, with Bluetooth headsets selected as the advertised product. The two sets of advertisements only differed in the generated character images and label content, while all other factors in the experimental process remained consistent.

Participants were randomly assigned to either the experimental group (labeled "This advertisement is generated by AI") or the control group (labeled "This advertisement is created by humans"). After screening, 243 valid questionnaires were finally retained. Among the respondents, there were 159 females (accounting for 65.4%), and their educational backgrounds were mainly concentrated at the undergraduate and master's levels. The experimental group and the control group had 123 and 120 samples respectively.

4. Research Findings

4.1. Reliability and Validity Analysis

This study employed Cronbach's α coefficient to assess the reliability of the scale. As shown in Table 1, the Cronbach's α coefficients for all latent variables are greater than 0.8, indicating that the scale demonstrates good reliability. Additionally, the Average Variance Extracted (AVE) for each measurement item is above 0.5, the standardized factor loadings are all greater than 0.6, and the Composite Reliability (CR) coefficients exceed 0.7. These results suggest that the scale has a clear structure, effectively measures the corresponding variables, and the data exhibit good convergent validity.

Table 1. Results of reliability and convergent validity tests

Variable	Items	Std. Loading	AVE	CR	Cronbach’s Alpha
Perceived eeriness	PE1	0.893	0.822	0.933	0.931
	PE2	0.885			
	PE3	0.941			
Perceived trust	PT1	0.889	0.818	0.947	0.946
	PT2	0.919			
	PT3	0.935			
	PT4	0.874			
Perceived effort	PF1	0.940	0.863	0.950	0.949
	PF2	0.969			
	PF3	0.875			
User acceptance willingness	UAW1	0.935	0.818	0.947	0.946
	UAW2	0.917			
	UAW3	0.901			
	UAW4	0.864			

Furthermore, the discriminant validity of the scale was assessed, and the results, as shown in Table 2, indicate that the absolute values of the correlation coefficients between all variables are smaller than the square roots of their respective Average Variance Extracted (AVE) values, demonstrating good discriminant validity of the scale.

Table 2. Results of discriminant validity test

Variable	Perceived eeriness	Perceive trust	Perceive effort	User acceptance willingness
Perceived eeriness	0.907			
Perceived trust	-0.814	0.904		
Perceived effort	-0.496	0.514	0.929	
User acceptance willingness	-0.854	0.886	0.615	0.907

Note(s): Diagonal elements are the square root of AVE for each construct.

4.2. Testing of Structural Equation Model

To further examine whether the hypotheses regarding the path relationships in the influence model of perceived eeriness on users' willingness to accept AI-generated advertisements hold true, this study employed AMOS 24.0 to construct a structural equation model. The specific analysis results are presented in Table 3. According to the results, all paths in the theoretical model constructed in this study have been validated, indicating that Hypothesis H1 is supported.

Table 3. Results of the path analysis.

Path	β	S.E.	C.R.	P
PE→PT	-0.616	0.054	-11.432	0.000
PE→PF	-0.434	0.075	-5.891	0.000
PE→UAW	-0.310	0.077	-4.026	0.000
PT→UAW	0.584	0.103	5.686	0.000
PF→UAW	0.189	0.054	3.501	0.000

Note(s): perceived eeriness (PE), perceived trust (PT), perceived effort (PF), user acceptance willingness (UAW).

This study examined whether perceived trust and perceived effort in the theoretical model played mediating roles. The Bootstrap method was selected, with the number of repeated samplings set at 5,000 and a 95% confidence interval chosen. The criterion for determining the presence of a mediating effect was whether the upper and lower bounds of the 95% confidence interval included 0. The results, as shown in Table 4, indicate that neither the upper nor lower bounds of the paths include 0. Therefore, both mediating effects of perceived trust and perceived effort are significant, and Hypotheses H2 and H3 are supported.

Table 4. Bootstrap mediation effect test

Model Effect	β	Percentile95%CI		P
		Lower	Upper	
Total Effect	-0.751	-0.862	-0.627	0.000
Direct Effect	-0.310	-0.511	-0.094	0.000
PE→PT→UAW	-0.360	-0.554	-0.227	0.000
PE→PF→UAW	-0.082	-0.151	-0.038	0.000

Note(s): perceived eeriness (PE), perceived trust (PT), perceived effort (PT), user acceptance willingness (UAW).

4.3. Comparative Analysis between AI Advertising and Human-Created Advertising

4.3.1. Manipulation Check

To test whether the manipulation of the AI-generated group and the human-created group in experiment was successful, a verification question was included at the end of the questionnaire: "Did

you notice the label 'This advertisement is generated by AI' in the advertising images you viewed at the beginning of the questionnaire?" The response data from the two groups of participants were analyzed using a chi-square test. The results revealed a significant difference in the responses between the two groups, χ^2 (1, N = 243) = 205.503, $p < 0.001$. This finding indicates that participants in the AI advertising group were more inclined to report that the advertising images had an AI-generated label, suggesting that the control conditions for the experimental manipulation were successful.

4.3.2. Between-Group Difference Analysis

To explore the differences in core variables such as user perception and acceptance willingness between AI-generated advertisements and human-created advertisements, this paper employs the independent-samples T-test method to conduct a comparative analysis of the two sets of experimental data, with the results shown in Table 4.

The results showed significant differences in perceived eeriness, perceived trust, perceived effort, and user acceptance willingness regarding the advertisements. The mean perceived eeriness of advertisements in the AI-generated group (M = 3.612) was significantly higher than that in the human-created group (M = 2.925), $p < 0.001$. This demonstrates that, compared to human-created advertisements, AI-generated advertisements exhibit a higher degree of eeriness from the user's perceptual perspective. Moreover, the mean values of perceived trust and perceived effort in the AI-generated group were significantly lower than those in the human-created group, indicating that users had significantly higher trust in human-created advertisements and believed that more effort was required to design human-created advertisements. Regarding users' willingness to accept the advertisements, the mean value for the AI-generated group was 4.167, while that for the human-created group was 4.719, $p < 0.001$, suggesting that human-created advertisements were more likely to gain user approval. In conclusion, compared to human-created advertisements, AI-generated advertisements made users perceive a higher level of eeriness and exhibited marked disadvantages in terms of establishing user trust, perceived effort, and user acceptance willingness.

Table 4. Difference Analysis between the AI Group and the Human Group

Variable	Generation Method	Number	Mean	Standard	P
Perceived eeriness	AI	123	3.612	1.582	0.000
	Human	120	2.925	1.412	
Perceived trust	AI	123	4.545	1.271	0.020
	Human	120	4.935	1.330	
Perceived effort	AI	123	3.352	1.603	0.000
	Human	120	4.361	1.631	
User acceptance willingness	AI	123	4.167	1.529	0.008
	Human	120	4.719	1.689	

5. Conclusions and Discussions

Based on the uncanny valley theory, this study employed a scenario experiment method to delve into users' willingness to accept AI-generated advertisements and the underlying influencing mechanisms. The findings reveal that perceived eeriness has a significantly negative impact on users' acceptance willingness, with perceived trust and perceived effort serving as mediating factors. Specifically, high perceived eeriness diminishes user trust and their recognition of the effort put into advertisement creation by the makers, thereby weakening their acceptance willingness.

This study offers theoretical support and practical guidance for advertising practitioners and technology developers to optimize advertisement design. When designing AI-generated advertisements, advertising practitioners should avoid elements that may evoke a sense of eeriness among users and ensure that the design aligns with users' cognition and aesthetics. Technology developers, on the other hand, should improve AI algorithms to enhance advertisement quality, reduce eeriness, and achieve the integration of technology and creativity.

However, this study has certain limitations. On the one hand, there are differences between the

experimental settings of the scenario experiment method and real-world advertising environments, which may limit the applicability of the conclusions. Future research could be conducted in more realistic contexts to improve external validity. On the other hand, there may be other unconsidered factors. Future studies can further explore more factors influencing users' willingness to accept to gain a comprehensive understanding of the acceptance mechanism of AI-generated advertisements among users.

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