

# A STUDY ON THE ADVERTISING EFFECT BY VIRTUAL ADVERTISEMENT INFORMATION AND PERCEIVED INTRUSION

Eun Hee Kim

*Dept. of Advertising & Public Relations & journalism,  
Mokwon University, 35349, Korea  
eunhee0103@mokwon.ac.kr*

**Abstract—** The purpose of this study is to empirically investigate whether there is a difference in the influence of the information of the advertisement on the advertisement effect by mediating the perceived intrusion according to the type of broadcast program exposed to the virtual advertisement. This study as an experimental research was conducted with university students in their twenties. Linear regression analysis was used to verify the research hypothesis. The analysis results are as follows. It was confirmed that the information of the virtual advertisement exposed to the drama has a negative effect by partially mediating the perceived intrusion on the advertisement attitude and brand attitude. However, it was confirmed that the mediating effect of intrusion perceived by advertisement attitude and brand attitude did not appear in the information of virtual advertisement exposed to entertainment. This study intends to have academic significance that influence of virtual advertisement information and mediating effect of perceived intrusion on advertisement effect was confirmed through empirical research. In addition, the above research results are expected to be useful data for advertising media strategies in the global advertising market.

**Keywords—** Virtual Advertisement, Advertising Information, Perceived Intrusion, Advertisement Attitude, Brand Attitude

## 1. INTRODUCTION

Many consumers think that advertising is a hindrance to content acceptance. In order to overcome this, advertisers are striving to form advertisement attitudes favorably by enhancing the attention and favorability of consumers. One of these efforts is a virtual advertisement that is allowed to be exposed within a range that does not interfere with the flow of broadcast content. Virtual advertisements, which were allowed only for sports broadcast programs, have been allowed to expand exposure to dramas, entertainment shows, and sports reports among terrestrial TV programs in 2015. In addition, expanding the exposure of virtual advertisements to terrestrial TV programs is a way to secure financial resources for the broadcasting industry and revitalize the stagnant advertisement market.

Virtual advertisement is a form in which a virtual image is inserted and exposed in a broadcast program using computer graphic technology [1]. It complements the shortcomings of existing TV advertisements and is exposed within a range that does not interfere with the flow of broadcast programs. Virtual advertisements can be placed in various places such as the right, left, and bottom of the contents in the broadcast program,

---

Received: October 9, 2020  
Reviewed: December 11, 2020  
Accepted: December 16, 2020



and it can be exposed to the prologue, epilogue, and rating notice from which the broadcast program starts. The types of virtual advertisements are classified according to technological development, and virtual advertisements are exposed in various forms, such as props, subtitles, and video types [2], so they are effective in providing attractions [3]. These virtual advertisements are exposed to consumer stimuli, pay attention, receive stimuli through sensory organs, forming advertisement attitudes by perceived advertisement information.

The efficiency and effectiveness of allowing virtual advertisements are being studied by many scholars. The effectiveness of virtual advertisements is to overcome the zapping phenomenon and advertisement congestion that were troubled by existing advertisements [4][5], as virtual advertisements can be arranged as part of a broadcast program. Among the advertisement attributes, it was also argued that virtual advertisements are more effective than general advertisements in terms of fun and advertisement effects [6]. However, it is argued that negative emotions such as annoyance and irritation that occur in virtual advertising reduce the advertising effect [7]. The annoyance and irritation of virtual advertisements are caused by the perceived intrusion of advertisements. Consumers were exposed to accept information in broadcast programs, but the perceived intrusion of advertisements forms negative attitudes of advertisements and leads to a decrease in advertisement effectiveness [8].

Advertising exposure is to provide consumers with necessary information for products and brands. Provision of information in advertisement is one of the pure functions of advertisement, which reduces product information search time by providing desired information of consumers [9] and has a positive effect on advertising attitude [10] [11]. The visual exposure of the virtual advertisement is to provide consumers with useful advertisement information by being exposed to the broadcast program; however, it can be considered a perceived intrusion that interferes with the content to the broadcast program audience.

As discussed above, virtual advertisements can be exposed to various broadcast programs. However, it has a limitation that it should not interfere with the flow of broadcast programs. Virtual advertisement is also exposed in trailers organized to raise curiosity and expectations for the next program after the broadcast program is over by utilizing these characteristics. The information of virtual advertisements exposed in program trailers can cause perceived intrusion in consumers who accept their broadcast programs, which can negatively affect the attitude of advertisements. Based on this, this study attempts to verify whether advertisement attitudes can be changed by mediating perceived intrusion according to broadcasting programs that can expose virtual advertisements. The above study aims to provide a wide range of understanding of virtual advertisement effectiveness and the implications for virtual advertisement execution strategies by confirming whether there is a difference in the advertisement effect that appears through the mediating of perceived intrusion according to the broadcast program.

## 2. RESEARCH HYPOTHESES

The following hypotheses were established to check whether there is a difference in the mediating effect of perceived intrusion that influences the advertising attitude and brand attitude according to the entertainment and drama in which the virtual advertisement is exposed.

Hypothesis 1. The perceived intrusion of the influence of the information of virtual advertisements on the attitude of advertising mediates in entertainment but will not mediate in drama.

Hypothesis 2. The perceived intrusion of the influence of the information of virtual advertisements on the brand attitude will mediate in entertainment but not in drama

### **3. RESEARCH METHOD**

#### **3.1. EXPERIMENTAL STIMULUS**

This study is to confirm the influence of the information of virtual advertisements exposed to entertainment and drama on the advertisement effect by mediating the perceived intrusion. The experimental stimulus to verify this was constructed as follows. First, the broadcasting programs in which virtual advertisements are exposed are dramas and entertainment programs. As a result of checking the familiarity of the two broadcast programs, there was no difference between entertainment ( $M=2.67$ ,  $SD=1.11$ ) and drama ( $M=2.92$ ,  $SD=.76$ ) ( $t=.72$ ,  $p=.47$ ). Second, for the virtual advertisement, a virtual coffee advertisement brand that has never been exposed was selected, and the virtual advertisement was produced by requesting an advertisement expert. Third, the size of the virtual advertisement did not exceed a quarter of the size of the broadcast program. Fourth, regarding the exposure position of the virtual advertisement in the broadcast program, the virtual advertisement exposure was exposed for 5 seconds after the broadcast program was over, inserted into the program where the trailer was aired.

#### **3.2. SUBJECTS AND METHODS OF INVESTIGATION**

The subjects of this study were students in their twenties. Subjects were classified into two experimental groups. The first was a group of virtual advertisement subjects exposed to entertainment; the second was a group of virtual advertisement subjects exposed to drama. The analysis data is 248 copies, excluding the data for unfaithful responses.

#### **3.3. SCALE**

The variables investigated in this study are perceived intrusion, advertising attitude, and brand attitude. The internal consistency of the perceived intrusion measurement item [12] [13] was confirmed as cronbach alpha .861. The internal consistency of the advertisement attitude measurement item [14] was confirmed as cronbach alpha .855. The internal consistency of the brand attitude measurement item [15] was confirmed as cronbach alpha .891.

## **4. RESEARCH RESULTS**

#### **4.1. HYPOTHESIS 1 TEST**

Research hypothesis 1 is a hypothesis verification that the influence of the information of virtual advertisements exposed to broadcast programs on advertisement attitude by mediating perceived intrusion will have a difference between entertainment and drama.

First, the hypothesis was confirmed by using the Baron & Kenny method in the linear regression analysis whether the perceived intrusion plays a mediating role in the influence of the information of the virtual advertisement exposed to the entertainment program on the advertisement attitude. The analysis results are shown in Table I. In the first level of analyzing the effect of the independent variable on the parameter, it was found that information had a significant effect on the perceived invasion ( $t=-2.945$ ,  $p<.01$ ). The regression coefficient was -.223, which had a negative effect, and the higher the information of the virtual advertisement, the lower the perceived intrusion.

In the second level of analyzing the influence of the independent variable on the dependent variable, it was found that information had a significant effect on advertising attitude ( $t=8.242$ ,  $p<.001$ ). The regression coefficient was .478, which had a positive effect, and it was confirmed that the higher the information of the virtual advertisement, the higher the virtual advertisement attitude.

In the third level of verifying the parameter effect, the influence of the independent variable and the parameter on the dependent variable was analyzed. As a result, both the independent variable, information ( $t=7.480$ ,  $p<.001$ ) and the parameter, perceived intrusion ( $t=-4.867$ ,  $p<.001$ ), had a significant effect on the attitude of advertising.

The higher the information of the virtual advertisement, the lower the perceived intrusion, the higher the advertisement attitude. In summary, it was confirmed that both the independent variable, the information and the parameter, the perceived invasion, affect the dependent variable, the attitude of advertising. In addition, it can be seen that the  $R^2$  value increased to .381 in Level 3.

Table I. Hypothesis 1. Analysis: Entertainment

Mediating effect Verification stage	Independent variable	Dependent variable	Standardization factor	t	F	$R^2$	$\Delta R^2$
			$\beta$				
Level 1	Information	Perceived intrusion	-.223	-2.945 **	8.671 **	.050	.044
Level 2	Information	Advertising attitude	.540	8.242 ***	67.927 ***	.170	.165
Level 3 (Independent variable)	Information	Advertising attitude	.471	7.480 ***	50.476 ***	.381	.373
Level 3 (parameter)	Perceived intrusion	Advertising attitude	-.307	-4.867 ***			

\*\*\* $p<.001$ , \*\* $p<.01$   
(Sobel test statistic=2.638, Two-sided verification,  $p<.001$ )

Next, in order to confirm whether the perceived intrusion plays a mediating role in the influence of the information of the virtual advertisement exposed to the drama on the advertisement attitude, the Baron & Kenny method was used in linear regression analysis. The analysis results are shown in Table II.

As a result of the analysis, in the first level of analyzing the effect of the independent variable on the parameter, it was found that information did not have a significant effect on the perceived invasion. In addition, as a result of first confirming the relationship between variables in the significance of variance analysis in regression analysis, as a result of confirming the relationship between the information of the virtual advertisement exposed to the drama and the parameter of perceived invasion, it was confirmed that it was not significant.

Baron & Kenny's three-level process to verify the parameter effect is to first verify whether the independent variable has a significant effect on the parameter in level 1. However, it was found that the information of the virtual advertisement exposed to the drama did not have a significant effect on the parameters of the perceived intrusion.

Table II. Hypothesis 2. Analysis: Drama

Mediating effect Verification stage	Independent variable	Dependent variable	Standardization factor	t	F	R <sup>2</sup>	ΔR <sup>2</sup>
			β				
Level 1	Information	Perceived intrusion	-.081	-1.032	1.065	.006	.000
Level 2	Information	Advertising attitude	.478	6.940 ***	48.169 ***	.228	.223
Level 3 (Independent variable)	Information	Advertising attitude	.464	6.827 ***	28.002 ***	.257	.248
Level 3 (parameter)	Perceived intrusion	Advertising attitude	-.170	-2.505 *			

\*\*\*p<.001, \*p<.05  
(Sobel test statistic=0.960, Two-sided verification, p=.34)

#### 4.2. HYPOTHESIS 2 TEST

Research hypothesis 2 is a hypothesis verification that the influence of the information of virtual advertisements exposed to broadcast programs on brand attitude by mediating perceived intrusion will differ between entertainment and drama. The analysis results are shown in Table III. In the first level of analyzing the influence of independent variables on parameters, it was found that information had a significant effect on perceived invasion. The regression coefficient was -.223, which had a negative effect, and it was confirmed that the higher the information of the virtual advertisement, the lower the perceived intrusion.

In the second level of analyzing the influence of the independent variable on the dependent variable, it was found that information had a significant effect on brand attitude. The regression coefficient was .414, which had a positive effect, and the higher the information of the virtual advertisement, the higher the brand attitude.

In the third level of verifying the parameter effect, the influence of the independent variable and the parameter on the dependent variable was analyzed. As a result, it was found that both the independent variable, information and the parameter, perceived intrusion, had a significant effect on brand attitude.

It was confirmed that the higher the information of the virtual advertisement and the lower the perceived intrusion, the higher the brand attitude. In summary, it was confirmed that both the independent variable, the information and the parameter, the perceived invasion, have a partial mediating effect because they influence the brand attitude, the dependent variable.

Table III. Hypothesis 2. Analysis: Entertainment

Mediating effect Verification stage	Independent variable	Dependent variable	Standardization factor	t	F	R <sup>2</sup>	ΔR <sup>2</sup>
			β				
Level 1	Information	Perceived intrusion	-.223	-2.945 **	8.671 **	.050	.044
Level 2	Information	Brand attitude	.414	5.850 ***	34.221 ***	.172	.167
Level 3 (Independent variable)	Information	Brand attitude	.376	5.249 ***	20.457 ***	.200	.190
Level 3 (parameter)	Perceived intrusion	Brand attitude	-.171	-2.391 *			

\*\*\*p<.001, \*\*p<.01, \*p<.05 Perceived tooth  
(Sobel test statistic=2.228, Two-sided verification, p<.05)

Regression analysis was conducted to confirm whether the perceived intrusion mediates the influence of the information of the virtual advertisement exposed to the drama on the brand attitude. The analysis results are shown in Table IV. In addition, the relationship between variables was confirmed by verifying the significance of variance analysis in regression analysis. As a result, it was confirmed that the influence of the virtual advertisement exposed to the drama on the information and the parameters of the perceived intrusion was not significant.

Baron & Kenny's three-level process to verify the parameter effect is to first verify whether the independent variable has a significant effect on the parameter in level 1. However, it was confirmed that the information of the virtual advertisement exposed to the drama did not significantly affect the parameters of the perceived intrusion.

In summary, hypothesis 2 shows the mediating effect of perceived intrusion when the information of virtual advertisements exposed to entertainment programs affects brand attitude, but no mediating effect in drama. Therefore, the arts and research hypothesis 2 was adopted.

Table IV. Hypothesis 2. Analysis: Drama

Mediating effect Verification stage	Independent variable	Dependent variable	Standardization factor	t	F	R <sup>2</sup>	ΔR <sup>2</sup>
			β				
Level 1	Information	Perceived intrusion	-.081	-1.032	1.065	.006	.000
Level 2	Information	Brand attitude	.532	8.023	64.365 ***	.283	.279
Level 3 (Independent variable)	Information	Brand attitude	.511	8.054 ***	44.161 ***	.353	.345
Level 3 (parameter)	Perceived intrusion	Brand attitude	-.265	-4.178 ***			

\*\*\*p<.001, \*\*p<.01  
(Sobel test statistic=0.381, Two-sided verification, p=.70)

## 5. DISCUSSION

The research results and discussion are as follows. First, it was confirmed that the information of virtual advertisements exposed to entertainment among broadcast programs mediated the perceived intrusion of consumers who watched the broadcast program to influence the attitude of advertising and brand attitude. In other words, it was found that the higher the information of the virtual advertisement, the lower the perceived intrusion, and the lower the perceived intrusion, the more positively the advertising attitude and brand attitude were. These results were confirmed to be in the same context as those of Goodrich, Schiller, & Galletta [21].

Second, it was confirmed that the information of the virtual advertisement exposed to the drama did not affect the perceived intrusion. However, it was confirmed that the higher the information of the virtual advertisement, the more positive the advertisement attitude and brand attitude, and the higher the perceived intrusion, the negative influence on the advertisement attitude and brand attitude. However, these results can be explained that the mediating effect of the perceived intrusion was not confirmed because the information of the virtual advertisement did not have a significant effect on the perceived intrusion.

Summarizing the above results, it was confirmed that the influence of the information of the virtual advertisement exposed in the broadcasting program on the advertisement attitude and brand attitude by mediating the perceived intrusion appears differently depending on the entertainment and the drama.

Virtual advertising has the advantage of solving the problem of advertising congestion and zapping, which are the limitations of existing advertising. However, the advantage of such virtual advertisement can be predicted that the effect may vary depending on the broadcast program to which the virtual advertisement is exposed. In addition, it is implied that the virtual advertisement exposure strategy requires the exposure location and virtual advertisement execution strategy in consideration of the characteristics of the broadcast program.

## REFERENCES

- [1] Broadcasting Act, Article 73, Paragraph 2, No.6
- [2] Korea Communications Commission. "Easy-to-Understand Broadcast Advertisement and Sponsorship Notification Monitoring Standards." Viewers Media Foundation (2018): 1-181.
- [3] Lee, Hee-Bok. "1 year of execution, the status and outlook of the virtual Advertisement Market." Daehong Communications, Special Theme. (2011). 07 June 2011. <http://www.ad.co.kr/journal/column/show.do?ukey=134573>
- [4] Lee, Soo-Bum. Lee, Hee-Bok., & Shin, Myoung-Hee. Research on Advertising Effect and Efficient Operation Plan for Activation of Virtual Advertisement, Korea Broadcasting Advertising Corporation, Research Report, December 2010.
- [5] Mullin, B. J., Hardy, S., & Sutton, W. Sport Marketing 4th Edition. Human Kinetics, 2014.
- [6] Bennett, G., Ferreira, M., Tsuji, Y., Siders, R., & Cianfrone, B. "Analyzing the Effects of Advertising Type and Antecedents on Attitude towards Advertising in Sport." International Journal of Sports Marketing and Sponsorship 8.1 (2006): 56-75.
- [7] Shin, Myeng-Shik., & Hwang, Ji-Hyun. "Analysis of Casual Relationship among Virtual Advertisement Attributes, Advertisement Attitude, Brand Attitude and Purchase Intention in Sports Broadcasting SEM." The Korea Journal of Sports Science 24.5 (2015): 851-863.
- [8] Choi, Eun Young., & Doh Sun Jae. "The Roles of Internet Use Motivation and Ability, Advertising Perception, and General Attitude toward Advertising in the Internet Advertising Avoidance." The Korean Journal of Advertising and Public Relations 13.2 (2011): 171-197.
- [9] Heyder, H., Musiol, K. G., & Peters, K. "Advertising in Europe: Attitudes towards Advertising in Certain Key East and West European Countries." Marketing and Research Today, (1992), 20.1 (1992): 58-67.
- [10] Kim, Yo-han., & Kim, Ji-hye. "Analysis of Attitudes Toward Advertisements of DMB TV and Fixed TV." Advertising Research 76 (2007): 29-54.
- [11] Brackett, L. K., & Carr, B. N. "Cyberspace Advertising vs. other Media: Consumer vs. Mature Student Attitudes." Journal of Advertising Research 41.5 (2001): 23-32.

- [12] Yang, Yoon Jik., & Cho, Chang Hoan. "A Study of Advertising Avoidance Level and Its Predictors in Various Media." *Advertising Research*, (2012), vol.92, pp.355-381.
- [13] Goodrich, K., Schiller, S., & Galletta, D. "Consumer Reactions to Intrusiveness of Online-Video Advertisements." *Journal of Advertising Research*, March (2015): 37-50.
- [14] Yu, Seung Yeob., & Kim, Eun Hee. "The Impact of Webtoon Context, Advertisement Types and Location on the Advertising Effect in Webtoon." *Korean Journal of Consumer and Advertising Psychology*, (2019), Vol.20, No.1, pp.1-30.
- [15] Ku, Yunhee., & Shim, Jae Chul. "A Study on the Mediating Effects of CSR Authenticity: Focusing on Corporate Ethical Reputation, CSR Consistency, and CSR Transparency." *Journal of Public Relations*, (2017), Vol.21, No.4, pp.1-29.