

# A Mediating Role of the Attributes of Information Source Depending on the Experience of using the Outdoor Advertisement Media: Focusing on the Digital Signage

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## Abstract

**Background/Objectives:** This study had its purpose on proposing improvement oriented usefulness of DS by comparatively analyzing effect of DS on TAM of expert and public according to NC in the reality that DS the NDS culture form reinforce its position as NOOHM. **Methods/Statistical Analysis:** This study tested the fundamental hypotheses by the employing structural equation model to control for measurement error, allow for the use of moderator variables, and enable the statistical testing of theoretical modeling. A statistical program, AMOS 8.0, was used for testing. The survey was conducted for 239 participants of this study who were attending universities in Seoul. **Findings:** As a result of verifying the difference of the averages in each factor between the group who used DS and the group who did not, there was a meaningful difference in the Aad ( $t = -2.63, p < .05$ ), reliability ( $t = -2.36, p < .05$ ), preference ( $t = -2.63, p < .05$ ), professionalism ( $t = -2.64, p < .05$ ), and PI ( $t = -2.67, p < .05$ ). This study shows that the professionalism can appeal the customers who have not experienced the digital signage as a superior strength. **Applications/Improvement:** It is believed necessary to make an active improvement to obtain the customers' perception of reliability so that the effectiveness of the digital signage media can be enhanced.

**Keywords:** Mediating Role, Information Source, Experience, OOHM, Digital Signage

## 1. Introduction

The reason digital signage gaining attention is decreased effect of traditional media, increased external activity of consumer and change of life pattern, increased demand of communication in contact point of purchase, increased need of delivery of message to subdivided target, easiness of creative change. As reflecting this trend, digital signage had sudden raise as outdoor advertisement this year, and it seems digital signage will replace the existing traditional outdoor advertisement, and future outdoor advertisement market also expected to be newly reorganized. After all, development and application of effect measurement system that could attract advertiser seems essential for

success of digital signage business<sup>1,2,3</sup>. Therefore, development of effect measurement system that could appeal advertiser is forecasted to be a new issue in the future, and is expected that era of new digital signage that clearly suggest accurate customer data calculation in store and sales extension analysis will be opened<sup>4</sup>.

Therefore, this study had its purpose on proposing improvement oriented usefulness of digital signage by comparatively analyzing effect of digital signage medium on TAM of expert and public according to need for cognition in the reality that digital signage the new digital culture form reinforce its position as new outdoor advertisement media with digitalization trend of society.

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## 2. Digital Signage Medium

NMDS is used to provide both public information, advertising, public relations, publicity, sales promotion, direct response, propaganda as marketing tools<sup>5,6</sup>. Recently, the trend in digital signage trend has helped vitalize the outdoor advertising media industry. NMDS(digital signage in new media) consists of screen displays located in public spaces showing video material by utilizing interactive marketing communication tools<sup>7-9</sup>. Digital signage communication technology has caused remarkable changes in society. In addition, The trend of digital signage technology has accelerated both qualitatively change and quantitatively change in new media era. NMDS continues to evolve in a number of ways, including the introduction of new media technology and the suitable development of advertising communication message for NMDS. Activity interest for digital signage media has emerged as an OOH advertising media, transforming the future of the OOH advertising industry. In order to ensure the success of OOH NMDS businesses industry, it is essential that investigator and researchers develop a system to measure the OOH medium's influence in drawing attention to the OOH advertiser<sup>10</sup>. Such a system should appeal to the OOH advertiser, produce accurate consumer data in the stores, and analyze the rate of sales growth<sup>11,12</sup>.

It has shaken the existing order of the world across society environmental system. In order words, it has altered not just the roles of digital signage in new media and technology but the modes of acceptance, and revolutionary change in society various system. <sup>13</sup>Argued the following: NMDS has gained attention due to the decreased effectiveness of ATL media (traditional four media), which has stemmed from an increase in external consumer activities than internal consumer activities, changes in lifestyle, an increased need to deliver messages in POP (point-of-purchase) or POS (point-of-sales) communication method, and a readiness for creativity message composition. Rapidly change in the media paradigms environment, the current study sheds new light on outdoor media. An rapidly emerging outdoor medium is digital signage, which can change communication messages whenever with digital communication technology.

Referring to NMDB, the OAAA (Outdoor Advertising Association of America) describes them as 'updated electronically through a variety of methods. Some are networked together, most are operated remotely, and all of them can be updated quickly, sometimes with just the

click of a mouse. This ability gives digital signage flexibility and nimbleness. This nimbleness gives local businesses a unique and powerful way to reach a large number of geographically targeted consumers very quickly<sup>14</sup>.

NMDS's content basically includes public relations, community information, advertisements, entertainment, interesting facts and news and retail environment for some time. Such screen networks go by many names, but we use the terminology 'digital signage' here as being most commonly used internationally. Recently the phenomenon of networks of screens in NMDS has made digital signage available as an effective, easily controlled communication medium. NMDS screen networks are used in many retail contexts, as well as department store, a large shopping mall, discount stores, apartment complex areas, individual stores, and downtown stores<sup>15</sup>. Downtown shopping mall (DC stores) use NMDS screen particularly to generate communication effectiveness and to maximize customer satisfaction and company image. Although there are a variety of options for communicating with customers at the POP or POS, this article focuses on NMDS. Customers are essential because this is where the life of an organization begins. Until customers place orders, nothing really happens<sup>16</sup>. Once customers think enough about your goods or services to buy them, then you are in business. Also, when customers stop placing orders, your organization starts to die. Customers thus have a great deal to do with the success or failure of an enterprise. We believe that customers are the engine, the critical driving force that powers a market economy.

## 3. Research Model

The fundamental hypothesis of this research examines the negative(positive) effect of new media digital signage on attitude toward advertising, attitude toward brand and purchase intention, with the communication source's characteristics of digital media signage as a moderator variable. This study tested the fundamental hypotheses by the employing structural equation model to control

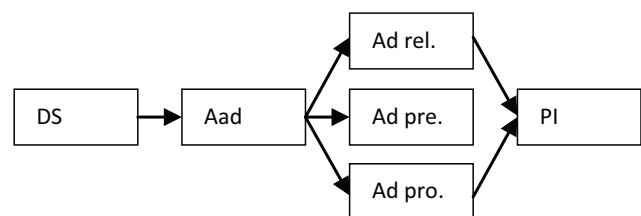


Figure 1. Model for Study.

for measurement error, allow for the use of moderator variables, and enable the statistical testing of theoretical modeling as shown in Figure 1. A statistical program, AMOS 8.0, was used for testing.

## 4. Hypotheses

Hypothesis 1. The effect of customers' attitudes toward the advertisement on the reliability, preference, and professionalism of advertisers will be different depending on their experience in using digital signage.

Hypothesis 2. The effect of customers' reliability, preference, and professionalism of advertisers on the purchase intention will be different depending on their experience in using digital signage.

## 5. Research Method

### 5.1 Participants and Data Collection

The survey was conducted for 239 participants of this study who were attending universities in Seoul. For the measurement variable, the semantic differential meaning scale of seven scores was used. The scale for the attitudes toward advertisement was comprised of four items such as 'intrusive-not intrusive', 'bad-good', 'informative-not informative', and 'unpleasant-pleasant'. The inter-item consistency was  $\alpha=.94$ . The scale for the reliability on advertisers consisted of four items such as 'honest-not honest', 'trustworthy-not trustworthy', 'serious-not serious', and 'sincere-not sincere', and its inter-item consistency was  $\alpha=.94$ . The scale for the preference of advertisers included three items such as 'likable-unlikable', 'feeling bad-feeling good', and 'feeling a sense of difference-feeling a sense of kinship', and its inter-item consistency in this study was  $\alpha=.93$ . The scale for the professionalism of advertisers had three items such as 'less professional-very professional', 'having few know-hows-having many know-hows', and 'incompetent company-competent company' and its inter-item consistency was  $\alpha=.93$ . The scale for the purchase intention was composed of three items such as 'unable to feel like purchasing-feel like purchasing', 'hard to recommend-recommendable', and 'will purchase if necessary-will not purchase even though necessary', and its inter-item consistency in this study was  $\alpha=.95$ .

### 5.2 Analysis

The findings of this study were analyzed using the following procedures. The path analysis was performed to investigate the effect of the attitudes toward advertisement on the attributes of advertisers depending on the experience in using digital signage and the effect of each attribute on the purchase intention. In the verification of a model, the total score of each factor was used in analysis. Argued that using a total score instead of several items can justify the result theoretically and empirically, and likewise, said that it is possible to use a total score if each measurement error or reliability is known. Therefore, this study carried out a path analysis of the effect of variables using a total score of each measurement item, and AMOS (Analysis of Moment Structure) was used to analyze this. To verify a model, the covariance matrix of total scores was used for analysis. In the goodness-of-fit analysis to evaluate the suitability of a model, a value, Goodness of Fit Index (GFI), Tucker-Lewis-Index (NFI), Root Mean Square Error of Approximation (RMSEA), and Comparative Fit Index (CFI) were all used at the same time<sup>17,18</sup>.

## 6. Analysis Results

Table 1 shows the correlation matrix and t-test results of the total scores from each factor that was used. As a result of verifying the difference of the averages in each factor between the group who used digital signage and the group who did not, there was a meaningful difference in the attitudes toward advertisement ( $t= -2.63, p < .05$ ), reliability ( $t= -2.36, p < .05$ ), preference ( $t= -2.63, p < .05$ ), professionalism ( $t= -2.64, p < .05$ ), and purchase intention ( $t= -2.67, p < .05$ ). In other word, the group who did not use the digital signage showed higher average values than the group who used it in all the measurement values.

As suggested in Table 2 as a result of the path analysis of a model depending on the experience of using digital signage, the model was shown to be suitable according to the various goodness-of-fit index figures. The results of the analysis on the hypotheses are summarized in the Table 3 First of all, when looking at the hypothesis 1, it is shown that in case of the group who used the digital signage, the attitudes toward advertisement have an effect on the reliability (path coefficient= .97,  $p < .001$ ), preference

(path coefficient= .97,  $p < .001$ ), and professionalism of advertisers (path coefficient= .96,  $p < .001$ ). In addition, in case of the group who did not use the digital signage, the attitudes toward advertisement also showed to have a meaningful effect on the reliability (path coefficient = .92,  $p < .001$ ), preference (path coefficient= .94,  $p < .001$ ), and professionalism of advertises (path coefficient = .95,  $p < .001$ ). In other word, in the both groups, the attitudes toward advertisement had a meaningful effect on the reliability, preference and professionalism of advertisers. On the other hand, when looking at the extent of influence between the two groups, the attitude toward advertisement of the group who used the digital signage showed more powerful influence than their counterparts who did not use it on the reliability (path coefficient = 16.17,  $p < .001$ ), preference (path coefficient = 10.50,  $p < .001$ ), and professionalism of advertisers (path coefficient = 4.84,  $p < .001$ ). Therefore, the hypothesis 1 can be all backed up.

showed a meaningful effect on the purchase intention. On the other hand, in the group who did not use the digital signage, the preference (path coefficient= .24,  $p < .05$ ) and professionalism (path coefficient= .58,  $p < .001$ ) had a meaningful influence on the purchase intention whereas the reliability (path coefficient= .16, n.s.) showed no meaningful influence on the purchase intention. In the meanwhile, when looking at the extent of influence between the two groups, the reliability ( $t = 0.58$ , n.s.) and preference of advertisers ( $t = 3.20$ , n.s.) showed no meaningful effect on the purchase intention between the groups whereas the professionalism of advertisers showed a meaningful effect on the purchase intention ( $t = 3.20$ ,  $p < .001$ ). Therefore, the hypothesis 2 can be supported by the result that the group who used the digital signage had a more powerful influence than the other group on the purchase intention in terms of the professionalism of advertisers.

**Table 1.** Correlation matrix and verification of difference for each factor

		Aad	TW	LK	EX	PI
EUS (n=119)	Aad	1.000				
	TW	.967***	1.000			
	LK	.965***	.962***	1.000		
	EX	.963***	.960***	.963***	1.000	
	PI	.950***	.943***	.947***	.950***	1.000
	M	3.14	3.12	3.08	3.14	3.15
	SD	1.38	1.37	1.44	1.41	1.38
NEUS (n=120)	Aad	1.000				
	TW	.917***	1.000			
	LK	.938***	.962***	1.000		
	EX	.953***	.928***	.956***	1.000	
	PI	.945***	.927***	.946***	.956***	1.000
	M	3.60	3.54	3.57	3.63	3.65
	SD	1.35	1.42	1.42	1.43	1.50
Verification of the difference (N)EUS(t)		-2.63*	-2.36*	-2.63*	-2.64*	-2.67*

\*\*\* $p < .001$ , \* $p < .05$

**Table 2.** Goodness-of-fit index of a model

	Chi-square	GFI	TLI	CFI	RMSEA
ES (n=119)	5.836(df=1, p=.016)	.981	.963	.996	.102
NES (n=120)	10.529(df=1, p=.001)	.967	.921	.992	.109

When looking at the hypothesis 2, in the group who used the digital signage, the reliability (path coefficient = .25,  $p < .05$ ), preference (path coefficient = .32,  $p < .01$ ), and professionalism (path coefficient = .41,  $p < .001$ )

## 7. Conclusion and Discussion

New types of media continue to make a rapid growth and diffuse its influence on the activities of individuals and companies across the society. This study is to promote the methods to vitalize the digital signage. For this purpose, this study compared and analyzed the accepting process of customers depending on whether they have experience of using the digital signage or not. Because the digital signage is a new medium, it is supposed that an extent to which customers accept the medium will be different depending on whether they have used it or not. It is judged that the digital signage can be positioned as the positive information provision medium in the future if the factors which cause a different level of favorable evaluation on information from a certain medium can be identified. The findings of this study suggest the possibility of the digital signage to be used as an outdoor advertisement medium.

There are two facts which have been revealed through this study. Above all, the customers who have not experienced the digital signage advertisement media accepted at a higher level the effects of the attitude toward advertisement, and the reliability, preference, and professionalism of advertisers compared to their counterparts who have experienced the signage advertisement media. It can be assumed from this fact that there is a high expectation of the effects of the digital signage advertisement media, and suggested that there needs more effort to give wider

**Table 3.** Results of hypotheses analysis

Hypotheses/CRD				PC		Critical Ratios		Critical Ratios for Difference
				EUS	NEUS	EUS	NEUS	
HY 1	Aad	→	TW	.967***	.917***	41.209	25.042	16.167***
	Aad	→	LK	.965***	.938***	39.997	29.493	10.504***
	Aad	→	EX	.963***	.953***	39.081	34.245	4.836***
HY 2	TW	→	PI	.248*	.158(n.s)	2.325	1.746	0.579
	LK	→	PI	.318**	.236*	2.860	2.052	0.808
	EX	→	PI	.406***	.584***	3.759	6.958	-3.199***

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$ , n.s.

publicity to the existence of the digital signage media and its application and value.

Next, in order of the professionalism, preference and reliability of advertises, they all have an effective influence on the purchase intention of customers who have experienced the digital signage. On the other hand, the professionalism and preference of advertisers shows an effective influence on the purchase intention of customers who have not experienced the digital signage whereas the reliability of advertisers has no influence. This means that in the purchasing behavior intention of customers who have not used the digital signage advertisement media, the professionalism and preference of advertisers can be more easily accepted. Furthermore, the professionalism shows more powerful influence on the purchasing behavior intention in the customers who have not experienced the digital signage than those who have. Likewise, the professionalism, preference and reliability shows an effective acceptance in this order in the purchasing behavior intention. Especially, the professionalism perceived by the non-use customers has a more effective effect than any other factors. This shows that the professionalism can appeal the customers who have not experienced the digital signage as a superior strength. Since the overall attitudes towards advertisement can be favorably formed by getting combined with the curiousness and novelty that a new medium brings about, people respond more actively in accepting products, services, or ideas. Also, because the professionalism, in particular, has a high influence, it is supposed that there needs to be an active effort to meet customers' expectation by highlighting the professionalism in the creative elements such as advertising copy and visual.

On the other hand, the factor of reliability shows a relatively weak effect on the purchasing behavior intention and even has no meaningful influence on the customers

who have not experienced the digital signage. Therefore, it is believed necessary to make an active improvement to obtain the customers' perception of reliability so that the effectiveness of the digital signage media can be enhanced.

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