

## Relationship Between Taekwondo Information Website attributes, Website Immersion, and Website Attitude

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### Abstract

The purpose of this study is to empirically grasp the relationship between website immersion and website attitude by the attribute factors of the Taekwondo information website and provide it as basic data for effective operation of the Taekwondo information website. The subjects of this study were Taekwondo athletes enrolled in high schools and universities affiliated with the Korean Taekwondo Association, and the sampling method was sampled using the convenient sampling method, a non-probability sampling method. Of the 820 questionnaires finally obtained, 789 were processed using PASW Statistics 20.0 and AMOS, except for 31 that were deemed to have poor respondents' contents or were not valuable as data. For data analysis, the statistical analysis techniques used in this study were frequency analysis, factor analysis, Cronbach's  $\alpha$  test, correlation analysis, and structural equation model analysis (SEM), and the significance level of the research hypothesis was  $\alpha=0.05$ . It was verified at 0.05. The following conclusions were drawn through such research methods and procedures.

First, information, entertainment, structure, cognition, searchability, and connectivity of Taekwondo information website attributes affect website immersion. Second, website immersion is affecting website attitudes.

**Keywords:** Taekwondo information, Website Attributes, Website Immersion, Website Attitude

### 1. Introduction

Modern industrial society is attracting attention for its interest and importance in information to the extent that it is an information society, and in particular, the rapidly developed modern science and technology civilization has emerged and continued to develop media that can deliver large amounts of knowledge and information. Modern people mainly experience social phenomena indirectly through Internet websites, and the trend is to determine the direction and attitude of thinking based on the information and knowledge obtained.

The Internet is a new media that not only integrates and delivers information such as voice and video graphics, but also enables interactive communication, and is growing into a medium that affects society as a

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whole, including industry, culture, politics, and economy [1]. In particular, since various sports-related information is always sought through communication with the website, high-quality content that can satisfy their needs is continuously developed and provided through the website [2].

Sports and the Internet are already closely related in modern society. In sports in today's information society, the Internet is used in all sports, from the Olympic website to various sports events, leagues, and professional sports websites, and the role of the Internet in sports is gradually being subdivided. Currently, most sports organizations not only use the Internet to provide online sports fans with communication opportunities with players, coaches, and other fans, but also allow users to selectively consume a variety of information to suit their tastes and preferences.

Taekwondo has many characteristics, but it is based on a situation in which it challenges more than one of the three types of objectives, such as personal standards or normative standards prescribed by the event, or competition with the opponent, as well as simply to determine the game by competition through muscle activity. This is because Taekwondo requires information acquisition ability through information about athletes and changes and modifications of related rules because there are changes in regulations and rules, and the player base also thickens. In other words, in the modern information society, it has become important to quickly obtain information about the game. Players from around the world check game information on the Internet, and through that information, there is an increasing tendency to prepare for the game and win. These points suggest that the website can be used as a venue for providing information and the large number of users related to Taekwondo information. Therefore, if a taekwondo-related website is established without a reasonable evaluation standard for efficient provision of taekwondo information, it may result in a difficulty in using information compared to the invested cost.

Website commitment is one of the factors that indicate how long a visitor stays on a website and how aggressively they use the website, and website commitment is related to the quality aspect of the website, and the higher the website commitment, the higher the quality of the website.

Also, the attitude of the Taekwondo Information website is an individual's evaluation of how he thinks about Taekwondo and how he feels about it. The higher the quality of the Taekwondo information website, the more positive attitudes toward Taekwondo can be formed.

Therefore, interest and research on Internet websites should continue in the field of Taekwondo information, and in particular, it is necessary to empirically identify research on Taekwondo information websites. Therefore, in this study, by analyzing how the attribute factors of the Taekwondo information website affect website immersion and website attitude, it will be possible to share various information about Taekwondo by improving the quality, perception, and attitude of the Taekwondo information website.

## **2. Research Hypothesis**

In this study, the following specific research hypotheses are established and verified by establishing a causal relationship between variables based on research variables and structural models established to investigate the relationship between factors related to Taekwondo information website attributes and Internet website involvement, immersion, and behavioral intention.

### **2.1 Relationship between Website Attributes and Website Immersion**

Website attributes were important factors for website users and meant determining website usage attitudes

[3]. Users read, view, or listen to content provided on the website. This user's information search behavior also provides users with the value of finding information quickly and efficiently [4]. In particular, website immersion is an experience experienced when contacting and using an Internet website, and refers to the body's perception phenomenon of optimal consciousness that occurs when one is completely immersed in the activities one is performing. It is believed that website attributes will have a positive effect on website users' immersion. Therefore, on the premise of this logic, this study established the hypothesis as follows.

Hypothesis 1. Taekwondo information website attributes (information, entertainment, structure, cognition, interactivity, search ability, and connectivity) will affect website immersion.

## 2.2 Relationship between Website Immersion and Website Attitude

Immersion is 'a willingness to maintain a relationship in the future, and to make short-term sacrifices to maintain such a relationship.' Recently [5], the concept of immersion has been usefully studied to understand the use environment of information technology and user behavior. Eventually, when users experience immersion, they gain positive experiences, and positive experiences make customers visit again [6]. These positive experiences are the driving force behind customers to revisit, even if they are not rewarded [7]. It was thought that immersion in the website would directly affect attitudes in the process of maintaining long-term relationships, so the following research hypothesis was derived.

Hypothesis 2. Website commitment will affect website attitude.

## 3. Research Method

### 3.1. Research Subjects

The subjects of this study were Taekwondo athletes enrolled in high schools and universities affiliated with the Korean Taekwondo Association, and the sampling method was sampled using the convenient sampling method, a non-probability sampling method. Of the 820 questionnaires finally obtained, 789 were finally processed, except for 31 copies of which the respondents' contents were poor or deemed not valuable as data. The general characteristics of the study subjects are shown in Table 1.

**Table 1. General Characteristics of Research Subjects**

	Sortation	frequency (name)	rate
Gender	male	563	71.4
	Woman	226	28.6
School type	high school	375	47.5
	univ.	414	52.5
frequency of use	once a week	418	53.0
	twice a week	190	24.1
	three times week	122	15.5
	more than four times a week	59	7.4
	합 계	789	100.0

### 3.2. Research Tools

The research tool of this study is questionnaire. To measure all concepts, the questions used in the preceding studies were modified and supplemented to the purpose of this study. As for the questions on website attributes, 33 questions were used by revising and supplementing them according to this study based on the questions used in Hyun M. (2007) study [8]. As for the questions on website commitment, six questions were used by revising and supplementing them according to this study based on the questions used in Noh J. (2004) study [9]. As for the questions on website attitudes, five questions were used based on the questions used in Hong H. (2004) study, modified and supplemented according to this study [10].

### 3.3. Validity of the Website Property Questionnaire

In this study, a factor analysis on website attributes was conducted using exploratory factor analysis to verify the validity of the questionnaire through a preliminary survey, and as shown in Table 2, the cumulative variance rate of seven factors related to website attributes was 58.763%. All of the survey results show factor loading values of .50 or higher, indicating that the survey content of this study can accurately measure website attribute variables.

**Table 2. Exploratory Factor Analysis Results for Website Attribute Factors**

Sortation	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
Q 04	.716	.124	-.014	.056	.214	.040	.136
Q 03	.716	.155	-.074	.109	.087	.074	.083
Q 05	.703	.060	.070	.114	.187	.142	.085
Q 02	.673	.229	-.086	.168	.107	.091	.130
Q 01	.662	.109	-.097	.146	.097	.242	.022
Q 06	.175	.754	-.061	.131	.066	.059	.104
Q 07	.177	.701	.050	.123	.143	.149	.046
Q 10	.057	.694	-.209	.057	.158	-.105	.167
Q 09	.157	.681	-.065	.078	.126	.064	.197
Q 08	.197	.678	.004	.113	.130	.083	.232
Q 13	.023	.059	.802	.023	-.025	-.033	-.009
Q 12	.072	-.034	.793	-.084	-.090	-.028	-.010
Q 14	.004	-.001	.793	-.024	.043	.017	-.061
Q 15	-.121	-.048	.676	-.002	.077	.092	-.070
Q 11	-.083	-.267	.638	.044	-.084	.062	-.058
Q 31	.154	.083	.053	.746	.083	.187	.111
Q 30	.080	.122	-.012	.724	.217	.109	.043
Q 33	.151	.009	-.053	.680	.119	.145	.162
Q 32	.189	.120	.001	.670	.054	.210	.173
Q 29	.103	.225	-.060	.612	.335	.052	.027
Q 25	.122	.203	.007	.173	.693	.166	.104
Q 26	.203	.054	-.022	.127	.685	.178	.200
Q 27	.105	.141	-.034	.176	.658	.045	.136
Q 24	.228	.141	-.016	.026	.615	.207	.193
Q 28	.187	.121	.003	.312	.587	.046	.154
Q 17	.154	.084	.050	.169	.034	.775	.032
Q 18	.165	-.008	.030	.142	.199	.768	.117
Q 19	.148	.119	.028	.181	.093	.728	.117
Q 16	.227	.011	.014	.148	.240	.659	.054
Q 21	.132	.125	-.056	.186	.092	.113	.733
Q 22	.093	.153	-.044	.089	.169	.129	.726

Q 20	.109	.260	-.042	.142	.150	.036	.689
Q 23	.079	.158	-.100	.069	.282	.034	.684
Eigenvalues	3.375	3.015	2.885	2.874	2.763	2.632	2.436
Distributed%	9.927	8.868	8.485	8.452	8.125	7.740	7.165
Accumulated%	9.927	18.795	27.281	35.733	43.858	51.598	58.763

### 3.3. The Reliability of the Questionnaire

As a result of analyzing Cronbach's  $\alpha$  test to find out the reliability of the questionnaire in this study, it is shown in Table 3, indicating that the questionnaire content can be measured reliably.

**Table 3. Confirmatory factory analysis & reliability**

Factors	Number of questions	reliability coefficient
Website Properties	informativity	.836
	entertainment	.817
	Structurality	.803
	Cognition	.809
	interactivity	.782
	Searchability	.792
	Connectivity	.807
Website immersion	6	.775
Website attitude	5	.855

### 3.4 Data Processing

To conduct this study, the collected questionnaires were computerized according to the purpose of data analysis using PASW Statistics 20.0 and AMOS, and the significance level of the research hypothesis was  $\alpha=0.05$ . It was verified at 05. For data analysis, the statistical analysis techniques used in this study were frequency analysis, factor analysis, Cronbach's  $\alpha$  test, correlation analysis, and structural equation model analysis (SEM).

## 4. Results

### 4.1 Confirmatory Factor Analysis

In this study, a Confirmatory Factor Analysis(CFA) was conducted to confirm the single dimensionality of research concepts composed of multiple items based on the reliability analysis results using Cronbach's  $\alpha$  coefficient.

In order to verify the centralized validity of the scales, a confirmatory factor analysis that estimated parameters with the Maximum Likelihood Estimation(MLE) was conducted on all research concepts included in this study's research model, and as shown in Table 4, it was found that the resulting model fit recommendation criteria were met.

**Table 4. Results of the confirmation factor analysis of the measurement model**

Factors	$\chi^2$	sig.	RMR	GFI	AGFI	NFI	CFI	RMSEA
informativity	105.865	.000	.036	.955	.896	.932	.937	.119
entertainmen	101.458	.000	.050	.950	.851	.921	.925	.156
Structurality	37.572	.030	.030	.981	.943	.968	.968	.091
Cognition	10.644	.005	.015	.993	.965	.989	.991	.074
interactivity	19.740	.000	.024	.998	.939	.976	.979	.106
Searchability	37.113	.000	.029	.981	.942	.965	.969	.109
Connectivity	73.406	.000	.040	.962	.885	.938	.942	.132
immersion	70.288	.000	.043	.968	.926	.928	.936	.093
attitude	22.076	.000	.018	.989	.966	.987	.990	.066

#### 4.2. Correlation Analysis

As a result of the feasibility and reliability analysis, a correlation analysis showing the analysis results of the structural model was conducted to find out the direction of the relationship between each research unit and how much the single-dimensionality was verified. As a result of the correlation analysis, as shown in Table 5, the negative (-) values of structural performance and correlation coefficients in the relationship between the proposed factors indicate that the structural complexity and correlation coefficients are inversely consistent. In addition, it can be said that most of the correlations in all correlation matrices except structurality were analyzed at a statistically significant level ( $p < 0.01$ ), and discriminant validity was secured.

**Table 5.. Correlation analysis between study variables**

Factors	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
informativity	1.000								
entertainment	.442**	1.000							
Structurality	-.069	-.165**	1.000						
Cognition	.463**	.228**	.044*	1.000					
interactivity	.358**	.474**	-.152**	.296**	1.000				
Searchability	.492**	.439**	-.065	.434**	.505**	1.000			
Connectivity	.434**	.368**	-.052	.454**	.391**	.513**	1.000		
immersion	.499**	.559**	-.150**	.397**	.440**	.538**	.432**	1.000	
attitude	.548**	.537**	-.072*	.453**	.402**	.517**	.458**	.632**	1.000
Average	3.556	3.096	3.014	3.555	3.227	3.371	3.403	3.274	3.362
S.D.	.664	.768	.749	.716	.736	.680	.695	.636	.750

\*  $p < .05$  \*\*  $p < .01$

#### 4.3. Assessing the Fit of the Early Structural Equation Research Model

As shown in Table 6. the results of verifying the suitability of the structural model for website attributes, website immersion, and attitudes initially set in this study. As shown in Table 6, the chi-square value ( $\chi^2$ ) belonging to the absolute fit index was 2827.196, the degree of freedom (df) was 1170, the significance (p)

was .000, the average difference between elements (RMR) was .042, the adjusted fit index (GFI) was .875, the standard fit index (NFI) was .850, the comparative fit index (CFI) was .909, and the approximate element average square error (RMSEA) was .041, indicating that it did not meet the desired evaluation criteria. Therefore, the initial hypothetical structural model was modified.

In this study, e1, e10, 14, e21, and e29 were removed through simplification of the measurement model to increase the fit of the initial research model. In the case of the first correction model, the chi-square value ( $\chi^2$ ) was 2375.386, the degree of freedom (df) was 1026, the significance (p) was .000, the average difference between elements (RMR) was .042, the fit index (GFI) was .884, the standard fit index (NFI) was .867, the comparative fit index (CFI) was .912, and the approximate element average square error (RMSEA) was .041 ( $\leq 0.08$ ), indicating that the desired evaluation criteria were not met.

In order to increase the suitability of the research model again based on the first revision model, e5, e6, e15, e18, e24, and e32 were removed through the simplification of the measurement model. In the case of the second modification model, the chi-square value ( $\chi^2$ ) was 989.644, the degree of freedom (df) was 521, the significance (p) was .000, the average difference between elements (RMR) was .032, the fit index (GFI) was .932, the adjusted fit index (AGFI) was .917, and the standard fit index (NFI). The comparative conformity index (CFI) was .951, and the approximate element average square error (RMSEA) was .037. Therefore, the revised research model satisfies the evaluation criteria, so it turned out to be an excellent model for final adoption.

**Table 6. Results of evaluating the fit of the research model**

Model	$\chi^2$	df	sig. <sup>a)</sup>	RMR <sup>b)</sup>	GFI <sup>c)</sup>	AGFI <sup>d)</sup>	NFI <sup>e)</sup>	CFI <sup>f)</sup>	RMSEA <sup>g)</sup>
Early research model	2707.484	1170	.000	.042	.875	.859	.850	.909	.041
1-order modification model	2375.386	1026	.000	.042	.884	.867	.856	.912	.041
2-order correction model	989.644	521	.000	.032	.932	.917	.903	.951	.034

### 4.3. Hypothesis Verification

As shown in Table 7. the relationship between Taekwondo information website attributes, website immersion, and attitude, focusing on the research model, and the structural model fit test and research hypothesis.

As a result of verifying Hypothesis 1 set up to explain the relationship between various attributes of Taekwondo information website and website commitment, information, entertainment, structure, cognition, searchability, and connectivity, which are factors of website attributes, were found to have a significant effect on website commitment, but interaction factors were found to have no significant effect and were rejected.

**Table 7. Research Model Hypothesis Verification Results**

Hypothesis	Route	Path coefficient	S.D.	t	p	result
H1-1	informativity → immersion	.223	.070	3.195	.001***	Adoption
H1-2	entertainment → immersion	.312	.066	4.702	.000***	Adoption
H1-3	Structurality → immersion	-.140	.040	-3.460	.000***	Adoption
H1-4	Cognition → immersion	.149	.067	2.235	.025*	Adoption
H1-5	interactivity → immersion	-.078	.070	-1.116	.263	Dismissed
H1-6	Searchability → immersion	.193	.080	2.418	.016*	Adoption
H1-7	Connectivity → immersion	.191	.085	2.250	.024*	Adoption
H2	immersion → attitude	1.309	.154	8.501	.000***	Adoption

\*p<.05 \*\*p<.01 \*\*\*p<.001

## 5. Conclusion

The purpose of this study is to empirically understand the relationship between Taekwondo information website attributes, website immersion, and website attitude. As of 2023, high school and university Taekwondo players enrolled in the Korea Taekwondo Association were selected as the population, and 820 samples were taken using the convenience sampling method, and the final 789 copies were used as the final analysis data, excluding 31 samples that were deemed not valuable as data.

The structured questionnaire was used as a survey tool in this study, and PASW Statistics 20.0 and AMOS were used to computerize according to the purpose of data analysis, and the research hypothesis was significance level  $\alpha=.05$ . It was verified at .05. The following conclusions were drawn through such research methods and procedures. First, information, entertainment, structure, cognition, search ability, and connectivity of Taekwondo information website attributes affect website immersion. Second, website immersion is affecting website attitudes.

Taking these results together, it is necessary to manage and improve the level of informatively, entertainment, structure, cognition, search ability, and connectivity in order to increase the immersion of Taekwondo information websites. In addition, in order to change the user's attitude on the website, it is necessary to provide vivid information and have rich content. Therefore, it is believed that in order to establish an effective Taekwondo information website, users should be updated with reliable and realistic information, and a website that can be most effective by closely grasping website users' preferences and trends.

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