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Article

User Satisfaction Study for Sustainability of YouTube Content Quality: Focusing on Ski Technology

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Abstract: The purpose of this study is to find a way to maintain the sustainability of YouTube quality by identifying the relationship between user satisfaction, perceived achievement, and continuous use intention of YouTube content quality that provides ski technology information. Moreover, with the recent emergence of the recent emergence of COVID-19, face-to-face activities have been limited and skiing technique is commonly conveyed through YouTube. Therefore, it is urgent to develop and provide meaningful skiing technique content and information to YouTube users. To this end, this study focuses on YouTube content on ski techniques provided by the Education Committee of Korea Ski Instructors Association. The subjects of this study were 322 individuals who watched five YouTube videos produced by the Education Committee at High1, Yongpyeong, Phoenix Park, and Welli Hilli 4 ski resorts located in Gangwon-do from November 2021 to March 2022. Frequency analysis, Cronbach's α , and correlation analysis were performed using SPSSWIN 24.0. In addition, AMOS 24.0 was used for confirmatory factor analysis and structural equation model analysis for hypothesis validation. All statistical significance levels were set to $p < 0.05$. The findings support the suitability of the research model.

Keywords: user satisfaction; sustainability; YouTube content quality; ski technology



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1. Introduction

A recent survey WISE App found that the mobile app most used by Koreans is YouTube, with a total of 46 billion minutes of use. Currently YouTube usage is on a rapid growth trend, with over 2 billion users per month and over 1 billion hours of video watching per day worldwide. It is arguably the most used application other than portals [1]. At the same time, the number of confirmed cases of coronavirus infection (hereinafter “COVID-19”) is increasing rapidly. In this situation, the government has implemented a social distancing campaign to prevent the spread of infection in the community. As a result, most social activities, including economic activities, are being minimized and online un-tact activities are being developed [2,3].

Moreover, with the rapid development of IT technology, the threshold for content production and distribution has been significantly lowered, and now many users use YouTube to search for information necessary for various purposes, including the effective use of leisure time. This means that YouTube’s variety of channels has an important effect not only on marketing but also on users’ behavior [4,5]. Regarding the level of economic activities conducted through YouTube, as of April 2020, offline sales of major retailers had decreased by 5.5% compared to the same month of the previous year, while the sales of

online distributors had increased by 16.9%. Thus, the utilization and value of YouTube have developed rapidly.

Before the recent development of YouTube with COVID-19, a non-face-to-face educational environment was created from elementary school to university, and there was also a non-face-to-face environment in social life. Various YouTube channels are currently being created to eliminate the barriers created by COVID-19 and difficulties of time and space, in particular in the sports scene. In the case of ski techniques, which is at the center of winter sports, although face-to-face education has been very important, but now the situation has arisen whereby ski technique information is provided and learned through YouTube. However, there is a lack of quantitative research on the extent to which the actual YouTube content quality is produced. It is necessary to predict the possibility of its growth through the evaluation of YouTube content quality. Furthermore, instead of actually experiencing ski technology, they watch content through YouTube. Therefore, the quality of content is very important for viewers to judge whether their strength can grow in the future. Although the relationship between YouTube content quality—user satisfaction and continuous use intention has been studied, the structural relationship related to ski technology has not been verified and needs structural grasp.

In contrast with social media or network videos, YouTube has the property that users directly participate and share content and information, so it functions to directly satisfy users' needs. Due to this, many people prefer to use YouTube channels [6,7], including ski-technique-related content. This study is intended to aid in the development of YouTube content related to ski technique to provide users with the necessary information, and the research was conducted accordingly. According to Haden and Feller [8], due to COVID-19, the system for exchanging information online has been found to be preferred to offline systems, which means that the research method selected in this study is likewise supported. In addition, according to Möller, Kühne, Baumgartner and Peter [9] and others, studies analyzing satisfaction based on quality remain limited, and some studies have suggested the necessity of mediating research focusing on YouTube content quality [10]. Therefore, in this study, the relationship between YouTube content quality, user satisfaction, achievement, and intention will be discussed with respect to content on ski techniques, focusing on whether the content can be continuously used in the field.

YouTube is creating and changing a new consumption market based on a video sharing platform [2], and users are increasingly using the YouTube platform with the expansion of the platform's impact. YouTube can be used not only for vicarious satisfaction, but also to find the most useful videos [11]. Though users freely choose YouTube content, research analyzing the relationship between achievement, satisfaction, and intention to use is insufficient, raising the need for research [12,13].

In the past, YouTube played a role in generating additional revenue through advertisements, views, and marketing activities inserted in the middle of the video, but its role is changing as it comes to serve as the main means of communication with users due to COVID-19 [14,15]. Thus, YouTube is changing in a variety of ways and is used in almost all industries, such as business, hospitals, news, game industries, sports industries, politics, and education. However, with the flood of information, users have difficulties in choosing the channels they need. Moreover, most channels that deliver sports technology through YouTube are simply trying to attract a large number of followers based on interest and fun, serving as a means of promotion rather than information delivery in a rush to popularity. Moreover, even on YouTube channels that include ski techniques, there are many channels that promote or market products focusing on factors such as the popularity, fun, interest, and entertainment of the creator. The problem with these channels is that it is difficult for users to learn skiing techniques, theories, and movements through the channels, and thus they are used only at the business level by simply immersing viewers in the clothes or equipment worn by YouTubers.

Therefore, in this study, there is a need for a study to understand the importance of the quality of content produced with the purpose of providing ski techniques through

YouTube, and to analyze the importance of quality of ski techniques, safe ski culture, and YouTube quality or users.

The purpose of this study is to provide YouTube users with basic information on the production of available content related to skiing technology. In particular due to the emergence of COVID-19, restrictions have been imposed on face-to-face activities, so ski techniques are being delivered through YouTube. To this end, this study focuses on YouTube content on ski techniques provided by the Education Committee of the Korea Ski Leaders Federation developing and providing meaningful content and information to users via YouTube channels.

2. Theoretical Background

2.1. YouTube Content Quality

YouTube is an Internet platform for sharing videos [2]. Users can produce various contents via the YouTube platform, and sites where the contents are gathered are called channels. That is, a YouTube channel may be considered a path for providing various products through YouTube. YouTube channels have a different pattern from general SNSs such as Facebook and Twitter that are representative services. On those platforms, user participation manifests as social participation, such as writing comments or clicking “like” [7]. In contrast, YouTube interacts with producers or other users by sharing content such as videos [3,6].

This user participation behavior is seen as a new phenomenon that is changing the consumption behaviors of YouTube channels [16]. Due to the expanding influence of the YouTube platform, users are increasingly relying on it for information search, leisure use, and learning purposes. This means that YouTube’s various channels play an important role in marketing and can influence user behavior [17]. In particular YouTube channels are not limited to one field, but are generated in all fields, so the range of use is very wide, manifesting a variety of characteristics depending on the field or producer. In this regard, there have been several recent studies of the YouTube platform [13]. Adnan et al. (2018) [16] emphasized the importance of videos produced by viewers, revealing that more views were found on channels created by viewers than on news channels. Belanche et al. [6] examined learner-generated content using YouTube, and concluded that the use of YouTube for learning purposes was successful, and added that existing YouTube-related research was expanding. Also compared the characteristics of YouTube channels and entertainment channels that emphasize the entertainment element, finding that users more often watched and were more satisfied with entertainment videos [13].

DeLone and McLean (2003) [18] proposed a method to classify content quality into system quality, information quality and service quality for measurement. Cho and Han (2018) [19] measured the video quality factors from four dimensions: simplicity, gameness, timeliness and vividness in his research on the impact of social media video UGC tourism information quality factors, user satisfaction, access intention and information sharing intention. Filieri and McLeay (2014) [20] measured users’ attitudes towards information acceptance through online comments. The results showed that the six dimensions of clarity, timeliness, accuracy, applicability, sufficiency and value-added of information affected information acceptance through the central path of the Elaboration Likelihood Model. Composed of suitability, timeliness and sufficiency and measured them. Analyzed the information characteristics of YouTube videos and concluded that video types affected the amount and value of social information generated corresponding to viewing frequency and videos. ELM (Elaboration Likelihood Model) is one of the persuasion theories, which explains how people internalize external information to form attitudes [21]. In the research of refined possibility model, the quality of arguments is related to the central path. In the social media environment, users exposed to overflow information will carefully evaluate the central path of the quality of information they receive, reflect it in their own decisions, and try to deal with information. Therefore, in this study, in order to understand the achievement degree and continuous use intention of the ski technology YouTube content

quality to user satisfaction and cognition, among the quality components of the pilot study, suitability, timeliness, information, timeliness. The study is made up of sufficiency [22].

2.2. User Satisfaction and Use Intention

In the literature related to information technology, satisfaction refers to the sum of emotional reactions after using information technology [23]. Satisfaction has a direct effect on use intention, which is the most important variable that induces future use, and is thus expressed as use intention in the information technology literature, referring to the continued use of information technology [24]. In the context of information technology, when a person who uses a specific object is satisfied with it, this will result in continued and repeated use. In other words, satisfaction and use intention have a strong relationship in information-technology-related literature. It was only recently that the relationship between satisfaction and use intention has been actively studied in the field of information technology [25]. Found that satisfaction directly affected use intention, and identified factors that can increase satisfaction. In a similar vein, Lu, Wang and Lu (2019) [26] investigated the relationship between user satisfaction and use intention in online courses, and found that user satisfaction has a direct effect on use intention, suggesting various methods to improve satisfaction. In addition, many studies suggest the importance of user satisfaction as an important influencing factor on users' future behavior. In relation to information technology, there has been active research on the relationship between satisfaction and behavioral intention in e-commerce and mobile environments, but such research regarding new platforms such as YouTube is relatively rare. Therefore, this study attempts to identify the relationship between user satisfaction and continuous use intention in the YouTube environment.

2.3. Perceived Achievement

Perceived achievement is the degree of development of the user's self-knowledge through learning, which includes attitudes, perceptions, and outcomes of learning in intellectual and non-intellectual areas such as knowledge, values, and attitudes [27]. In this regard, examined the pursuit of achievement goals through content that satisfies users' interest and desires, showing that if these are satisfied, the level of achievement increases. Pointed out the importance of information that users are interested in as a way to increase the level of achievement, suggesting that the level of information requested by users is important because when users access information that they are interested in, their desire to achieve is increased, showing a direct effect on the level of achievement. Tsai, Finger, argued that the perceived achievement of users will show a high effect on achievement when the information is well organized by the method of application with the level of content provided, the structure of the system, and the theory. Therefore, this study attempts to identify the causal relationship between ski technique content quality and user achievement.

2.4. Research Hypotheses

From the theoretical relationships of the research hypotheses posited in this study, the relationships that affect satisfaction in the process of selecting a YouTube channel have various attributes. Among the specific attributes of YouTube are factors such as relevance, timeliness, informativeness, and the sufficiency of the contents that provide information requested by users, and there is a need to check whether various information, appropriate information, and the latest information are included. It is judged that these attributes will lead users to perform different actions and have a positive impact on their continuous participation.

In addition, the higher the level of information provided on YouTube and the more information that users wanted was provided, the more positive post-satisfaction would be. Also pointed out that when the users' collected information meets their desired purpose, it leads to satisfaction and positive purchasing behavior [14]. Indicate that continuous

involvement and participation can result depending on the perceived achievement level, which also affects loyalty. It was expected that to the extent that YouTube met the demands of users for content quality, satisfaction, use intention, desire to achieve, usefulness, loyalty, involvement, trust, etc., may be increased, which can result in consumer loyalty. Kim and Yang (2019) [28], believed that the relevance, value and timeliness of content quality have a positive (+) significant impact on audience satisfaction in the research on the impact of content quality, originator attributes, audience satisfaction and action intention of personal radio catering channels. Coursaris and Osch (2016) [29], believed that the reliability of Youtuber directly affects the usefulness and satisfaction of information, and indirectly affects its adoption. Chen and Tsai (2007) [30], when collecting necessary information and obtaining expected results, satisfied with the information, which proved that it would have an impact on the positive reputation effect and repurchase intention of the goods or services. Therefore, for ski technology, YouTube viewers believe that the quality of YouTube they watch, namely suitability, timeliness, information, sufficiency, will have a positive impact on user satisfaction, and further believe that this satisfaction will have a positive impact on cognitive achievement and continuous use intention.

Based on the results of previous studies, the following hypotheses were proposed, all the hypotheses are shown in Figure 1.

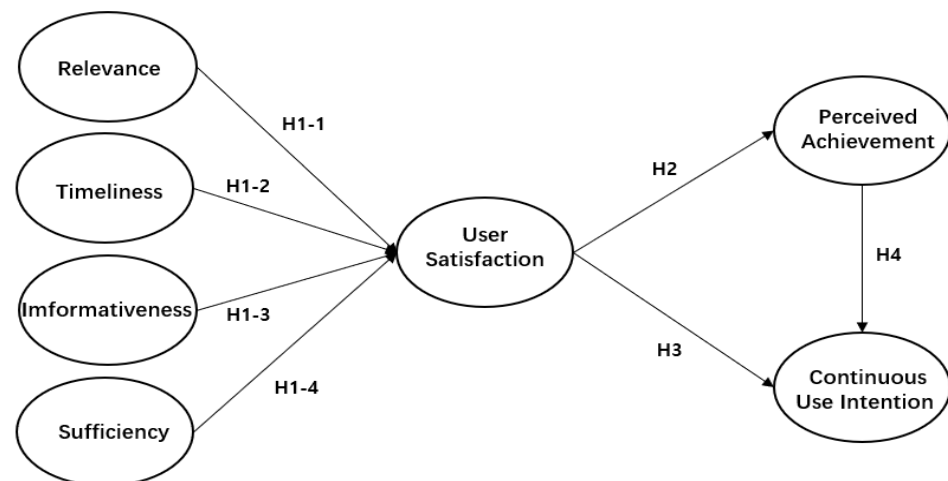


Figure 1. Research model.

H1 (H1-1, H1-2, H1-3, H1-4). *The content quality of YouTube for ski techniques has an effect on user satisfaction.*

H2. *The user satisfaction with YouTube content quality for ski techniques has an effect on perceived achievement.*

H3. *The user satisfaction with YouTube content quality for ski techniques has an effect on continuous use intention.*

H4. *Perceived achievement of YouTube content quality for ski techniques has an effect on continuous use intention.*

3. Research Methods

3.1. Research Subject

The subjects of the study were chosen as the population who had watched the YouTube content (five episodes in total) produced by the Education Committee of the Korean Ski Instructors Federation at four ski resorts (High1, Yongpyeong, Phoenix Park, and Welli Hilli 4 ski resorts) located in Gangwon-do from November 2021 to March 2022.

After explaining the purpose and purpose of the research in the four ski resorts, the selected subjects reported the ski resorts and ski schools to ordinary people using the

announcement items and bulletin boards, and classified the YouTube audience among ordinary people recruited for research. During this process, the researcher and 4 auxiliary researchers completed the process of screening the previous episode's viewing objects, and used the convenient sampling method. Due to the reason of novel coronavirus, the questionnaire is made in the principle of non-face to face and in the legislative way of self-evaluation machine. The questionnaire is distributed and recovered directly on site. In this process, the content of the YouTube video that was viewed was confirmed at a pre-coordinated place (the introduction booth in the ski house) in advance, and then the questionnaire was filled out and submitted. The characteristics of the specific subjects are shown in Table 1. In terms of gender, there were 171 male (53.1%) and 151 female (46.9%) respondents for a final total of 322 respondents to the questionnaire. In terms of age, 91 people (28.3%) in their 40s responded, and those in their 20s, 30s, and 50s also responded at average rates of 20% or more, indicating that almost all age groups watch YouTube, suggesting the importance of YouTube quality. In terms of educational background, the rate of those who answered that they were college students was 8% (26), and many others had a higher degree, showing that they were an intensive target for understanding the purpose of the study. By monthly income, 144 (40.4%) earned more than 4 million won per month. By frequency, 145 (59.6%) people watched YouTube 3 times per week and 130 (40.4%) respondents watched it 4 times per week or more, and many people confirmed that they participated in skiing by watching YouTube. It can be said that beyond the simple function of providing information, YouTube is a tool that has a great influence on viewers, confirming that this study was suitable for achieving the research purpose.

Table 1. Characteristics of study subjects.

Item	Demographic	Frequency	Percentage (%)
Gender	Male	171	53.1
	Female	151	46.9
Age	20's	81	25.2
	30's	80	24.8
	40's	91	28.3
	50's	70	21.7
Level of education	College/university	26	8.0
	Vocational colleges	72	22.4
	Graduate	135	41.9
	Postgraduate or above	89	27.6
Monthly income	Less than 3 million won	41	12.7
	Less than 4 million won	137	42.5
	More than 4 million won	144	44.7
Number of views	Once a week	4	1.2
	Twice a week	43	13.4
	3 times a week	145	59.6
	More than 4 times a week	130	40.4
Total		322	100.0

3.2. Investigation Tools

3.2.1. YouTube Content Quality

YouTube content quality was defined and measured with a questionnaire used in studies by and others. It is divided into four factors, with 4 items each for relevance, timeliness, informativeness, and sufficiency, with all items scored on a 5-point Likert scale.

3.2.2. User Satisfaction

User satisfaction was intended to measure overall satisfaction with the YouTube content quality via the questionnaire used in, with all items scored on a 5-point Likert scale.

3.2.3. Perceived Achievement

Perceived achievement referred to the level of expressing theory and technology through the learning expected from the YouTube content quality, and was measured with the questionnaire used by with all items scored on a 5-point Likert scale.

3.2.4. Continuous Use Intention

Continuous use intention refers to a more specific and active attitude level when the cognitive and emotional evaluation of service or program is positive. with all items scored on a 5-point Likert scale.

3.3. Confirmation Factor Analysis

The results of confirmatory factor analysis are shown in Table 2. The goodness-of-fit indices $\chi^2 = 481.375$, $df = 319$, $CFI = 0.968$, $TLI = 0.962$, $RMR = 0.058$, $RMSEA = 0.040$, $p < 0.001$ indicate a desirable level of fitness: CFI and TLI are considered as showing good fit if they are above 0.90 and RMR and RMSEA if less than 0.08. Thus, it was confirmed that the results of the analysis in this study were appropriate [31,32]. In order to confirm the convergent validity, t-values, average variance extraction (AVE), and conceptual reliability for the factor load of the final extracted items and constituent factors were verified. Point out that if the conceptual reliability value exceeds 0.6 and AVE value exceeds 0.5, this shows high reliability, confirming that there is no problem in using the structural equation model for the main purpose of this study [33].

Table 2. Confirmatory Factor Analysis and Conceptual Reliability.

Variables	Factors	Estimate	S.E.	t	C.R.	AVE
Relevance	It provides content that meets the purpose of viewing.	0.707				
	It contains useful content.	0.891	0.080	14.835 ***	0.852	0.592
	It contains the content that what I need.	0.842	0.073	14.150 ***		
	It is a content that meets my requirements.	0.846	0.081	14.330 ***		
Timeliness	It is Provided timely information.	0.837				
Timeliness	It is provided new information.	0.892	0.059	18.160 ***	0.853	0.593
	It is provided updated information.	0.819	0.063	15.323 ***		
	It is provided necessary information	0.770	0.055	15.490 ***		
	Imformativeness	It is provided educational information.	0.764			
Imformativeness	It is provided various information.	0.791	0.106	10.563 ***	0.817	0.528
	It is provided specific information.	0.769	0.107	11.328 ***		
	It is provided reliable information.	0.817	0.103	11.759 ***		
	Sufficiency	There is a lot of content that I need.	0.784			
Sufficiency	There is adequate amount of content.	0.911	0.115	11.089 ***	0.853	0.593
	There is a wide variety of content that you can watch.	0.854	0.108	10.676 ***		
	It is provided enough content for me.	0.801	0.116	10.318 ***		
	Use Satisfaction	The content is generally satisfactory.	0.764			
Use Satisfaction	I am satisfied with the content I have watched.	0.768	0.094	9.630 ***	0.824	0.539
	The content what I watch is good for me.	0.805	0.081	13.602 ***		
	My choice is a wise one	0.807	0.073	13.628 ***		

Table 2. Cont.

Variables	Factors	Estimate	S.E.	t	C.R.	AVE	
Achievement	The content is good for me.	0.792				0.814	0.523
	The content is easy to understand.	0.814	0.064	14.065 ***			
	The theory of content is easy to apply.	0.882	0.058	11.888 ***			
	The description of content is easy to express.	0.709	0.069	10.525 ***			
Use Intention	I am willing to reuse the content I had watched.	0.843				0.863	0.613
	I will definitely use the content channel that I had watched.	0.746	0.059	15.198 ***			
	I will recommend the viewing to my friends	0.894	0.061	19.557 ***			
	The next time when I watch, I will search around this content.	0.794	0.062	16.631 ***			

$\chi^2 = 481.375$, $df = 319$, $CFI = 0.968$, $TLI = 0.962$, $RMR = 0.058$, $RMSEA = 0.040$, $p < 0.001$, *** $p < 0.001$.

3.4. Correlation Analysis and Cronbach's α

The results of the correlation analysis are shown in Table 3. If the correlation between potential factors is less than 0.8, it is deemed that there is no multicollinearity problem. In addition, Cronbach's α had a value from 0.899 to 0.812, thus ensuring reliability [34]. In terms of the validity of discrimination, it can be confirmed by comparing the AVE value and the correlation coefficient value between the constituent concepts. It is generally believed that when all AVE values are greater than the square value of the correlation coefficient, the validity of discrimination is ensured. In this study, the highest square value of the correlation coefficient is 0.248. This is lower than the lowest AVE value of 0.523, which can be said to ensure the discrimination feasibility of the configuration concept. Table 3 gives the AVE value in diagonal direction, and the number in brackets represents the determination coefficient (r^2), so as to judge the feasibility of discrimination.

Table 3. Correlation matrix for the overall measurement model and Cronbach's α .

	Relevance	Timeliness	Informativeness	Sufficiency	User Satisfaction	Perceived Achievement	Continuous Use Intention
Cronbach's α	0.892	0.899	0.821	0.889	0.812	0.813	0.889
Relevance	0.592						
Timeliness	0.150 ** (0.023)	0.593					
Informativeness	0.261 ** (0.068)	0.091 (0.008)	0.528				
Sufficiency	0.357 ** (0.127)	0.454 ** (0.206)	0.191 ** (0.036)	0.593			
User satisfaction	0.004 (0.000)	0.204 ** (0.042)	0.094 (0.009)	0.232 ** (0.054)	0.539		
Perceived Achievement	0.191 ** (0.036)	0.245 ** (0.060)	0.315 ** (0.099)	0.485 ** (0.235)	0.297 ** (0.088)	0.523	
Continuous Use intention	0.171 ** (0.029)	0.240 ** (0.058)	0.266 ** (0.071)	0.259 ** (0.067)	0.390 ** (0.152)	0.498 ** (0.248)	0.613

** $p < 0.01$.

3.5. Data Processing

In this study, data processing centered on the questionnaire that the research subjects completed and submitted after loading the questionnaire on the Internet Naver Office form, and SPSSWIN Ver. 24.0 and AMOS 24.0 were used. First, frequency analysis, reliability test (Cronbach's α), and correlation analysis were performed using SPSSWIN 24.0. In addition, the hypotheses were verified through confirmatory factor analysis and structural equation model analysis using AMOS 24.0. All statistical significance levels were set to $p < 0.05$.

4. Results

4.1. Suitability of the Research Model and Path Model Results

According to the research model’s goodness of fit indices and path model results, the maximum likelihood method (ML) was used for the parameters of the structure model, and the results of the goodness-of-fit test are shown in Table 4, CFI = 0.975 (>0.90), TLI = 0.971 (>0.90), RMR = 0.070 (<0.08), RMSEA = 0.052 (<0.08), indicating that the research model was suitable.

Table 4. Goodness of fit of research model.

Goodness of Fit Standards	χ^2	df	CFI (>0.90)	TLI (>0.90)	RMR (<0.08)	RMSEA (<0.08)
Fit index	448.562	322	0.975	0.971	0.070	0.035

4.2. Hypothesis Tests and Result of the Model

The results of the hypothesis validation set in this study are shown in Table 5 and in Figure 2.

Table 5. Hypothesis test results.

Hypothesis	Path	Estimate	S.E.	C.R.	Adopt or not
H1	Relevance	0.144	0.071	1.998 *	Adopted
	Timeliness	0.166	0.069	2.276 *	Adopted
	Informativeness	0.189	0.090	2.479 *	Adopted
	Sufficiency	0.156	0.089	2.000 *	Adopted
H2	User satisfaction → Perceived Achievement	0.164	0.063	2.732 **	Adopted
H3	User satisfaction → Continuous use intention	0.255	0.047	4.429 ***	Adopted
H4	Perceived Achievement → Continuous use intention	0.518	0.050	8.102 ***	Adopted

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

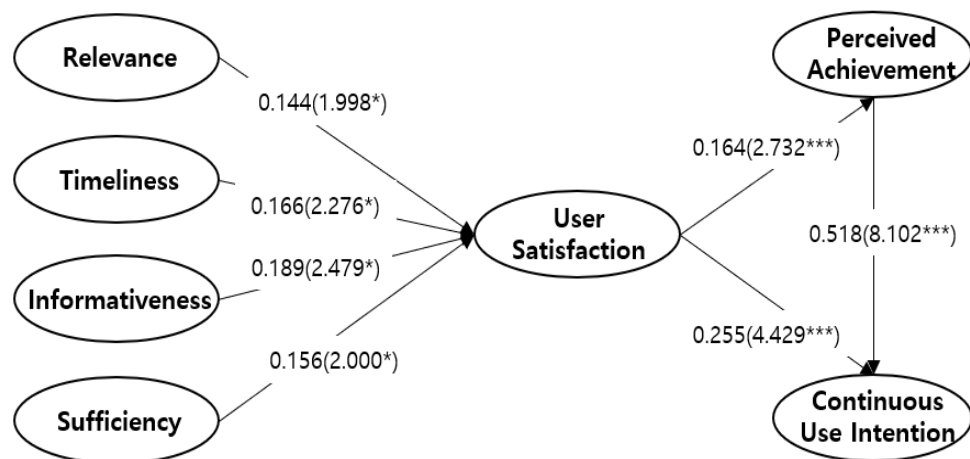


Figure 2. The results of structural analysis: standardization path coefficient. *** $p < 0.001$, * $p < 0.05$.

The results of the empirical analysis for Hypothesis 1 show that the path coefficient of sufficiency was 0.141; the critical ratio is 1.998 ($p < 0.05$); the path coefficient of timeliness is 0.156 and the critical ratio is 2.276 ($p < 0.05$); the path coefficient of informativeness 0.223 and the critical ratio is 2.479 ($p < 0.05$); the path coefficient of sufficiency is 0.179, and the critical ratio is 2.000 ($p < 0.05$); all hypothesis factors were adopted.

The results of the empirical analysis for Hypothesis 2 show that the path coefficient for user satisfaction was 0.172 and the critical ratio was 2.732 ($p < 0.01$), indicating that the hypothesis was accepted.

The results of the empirical analysis for Hypothesis 3 show that the path coefficient of user satisfaction was 0.209 and the critical ratio was 4.429 ($p < 0.001$), indicating the hypothesis was accepted.

The results of the empirical analysis of Hypothesis 4 showed that the path coefficient of user satisfaction was 0.409 and the critical ratio was 8.102 ($p < 0.001$), indicating the hypothesis was accepted.

5. Discussion

5.1. Quality of YouTube Content for Skiing and User Satisfaction

Among the sub-factors of Hypothesis 1 regarding the quality of YouTube content for ski techniques, the factors of relevance, timeliness, informativeness, and sufficiency were found to have a positive effect on user satisfaction. A detailed discussion follows.

First, the relevance of YouTube ski techniques has a positive effect on user satisfaction. In general, most YouTube video content is produced in short forms and has the property of providing content to users quickly and easily [8]. Most of the videos that provide technical skiing content have durations of 1 to 3 min or less. However, the characteristic of YouTube content used in this study is that it provides content lasting from 10 min to 18 min at the longest. This prolonged viewing time includes content that is not often covered in ski techniques (such as ankle use, toe use, large muscle use, and body use), and it can be seen as the reason for organizing an educational program to acquire correct ski techniques. Haden and Feller (2020) [8], note that YouTube content with a length of 10–15 min is of high value for utilization, for if the duration is too short, it may be difficult to deliver information instead of entertainment. Therefore, it was confirmed that the YouTube channel used in this study was of an appropriate length for learning skiing skills. Kurochkin and Bokhan (2019) [35], state that the reason for the rapid development of YouTube is originality, and that users want to obtain information through YouTube because they can recreate it through imitation. In contrast with the contents related to ski techniques in the past, the contents used in this study strove for educational originality, and it was confirmed that similar YouTube contents were produced and distributed after these contents were distributed. Consequently, as Möller et al. (2019) [13] and Juza (2013) [36], point out, YouTube serves as a new center for conveying the information and knowledge required by users, and it was suggested that this yields meaningful results. In summary, on the basis of the YouTube content in this study, it is judged that content creators who want to provide ski-technique-related information should strive to provide more educational content.

Second, the result that the timeliness of YouTube for ski techniques had a positive effect on user satisfaction has been reported by Rösner, Winter and Krämer (2016) [22], and other studies. Among the qualities of YouTube contents, timeliness refers to content created based on new information. In contrast with existing ski technique contents, in this study the contents illuminate the techniques in depth and serve an educational purpose, which was confirmed through the comments that they approached the topic from a new perspective. Belanche et al. (2020) [6], also suggested that the timeliness of YouTube content will affect consumers' satisfaction as well as their behavior. The importance of YouTube's timeliness has increased because it can be viewed anytime and anywhere, and has an intuitive information delivery power, in contrast with TV or text. In addition, it has been confirmed that YouTube provides services that meet the needs of users [37]. Therefore, the YouTube content for ski techniques used in this study includes educational aspects that are necessary for users, in contrast with previous one-off focused content. As the differentiated content is provided in an easy-to-understand format, there is thus a need to revise content to better match this format, because it is judged that the development of content mediated between creators and users can be achieved through the advantages of YouTube.

Third, the results of are corroborated by the finding that the informativeness of YouTube for ski techniques has a positive effect on user satisfaction, supported by the finding that the informativeness of information-providing YouTubers is more important than anything else. In addition, trust in a YouTuber is expected to increase user satis-

faction. Thus, when providing content and trying to communicate with users, trust is expected to play a positive role among those who want to use the YouTube channel. Also pointed out the importance of the informativeness factor of YouTube, noting that when the informativeness of a YouTube video is high, users will express this in comments or “likes,” generating communication between YouTube creators and users. Recently, YouTube users obtaining various information through YouTube have experienced an impact on their behavior, leading them to use YouTube channels to spend their leisure time. Thus, the scope of use of YouTube is continuously expanding, as well as the ripple effect of YouTube platform whereby users show an increasing tendency to depend on the YouTube platform. According to these changes, it is judged that if the faithfulness of the information to be conveyed is recognized at the time of YouTube production, it will become a more meaningful YouTube content.

Fourth, as for the result that through the sufficiency of ski techniques, YouTube has a positive effect on user satisfaction, Bolliger and Martindale (2004) [38], found that the sufficiency of the content provided online affects the user’s actual behavioral intention, and that the sufficiency factor acts as an important clue for users. Also pointed out the importance of the sufficiency factor of information content, and stated that users are satisfied when the sources of information are various and sufficient. Thus, that the sufficiency factor of ski technique YouTube content has a positive effect on user satisfaction was supported. Argue that YouTube content is actually used by many people, and thus that if the level of information is sufficient, it will affect users’ behavior. Thus, the result of the positive effect of the sufficiency factor on user satisfaction in this study is meaningful. However, there is a variety of information sharing through YouTube, and because the content has a great influence on users’ behavior, most YouTube channels have much content used for indirect advertising, marketing, and personal business. Therefore, there is a need to promote the creation and provision of content through a system to deliver necessary information to users, which should gradually play an increasingly important role. Therefore, YouTube channels that provide content such as ski techniques should focus on the content needed by users, as well as ensuring that such content distinguishes advertisement and information delivery.

5.2. User Satisfaction and Perceived Achievement

The results of the empirical analysis of Hypothesis 2 show that the path coefficient of user satisfaction is 0.368 and the critical ratio is 4.754 ($p < 0.001$), indicating that hypothesis was accepted. Stated that the information provided through YouTube is easy for the general public to understand. Also point out that because the degree of achievement varies depending on the level of content information and users’ perceptions, trustworthy information should be provided first. In this study, it was found that the quality of ski techniques content can increase user satisfaction, and the perceived achievement level was also shown to be high. Gunawardena and Duphorne (2001) [39], and Forgeron (2005) [40], showed that the higher the satisfaction of courses conducted online, the higher the achievement of learning, establishing a positive relationship, supporting the results of this study. Reino and Hay (2016) [15], pointed out that users need to be careful in the future to find a channel that provides necessary information. Although most YouTube channels are an important means of information delivery and communication between consumers and creators, they are often used to generate economic profit through advertising or marketing, so it is also an important task to find a channel that meets the user’s purpose. Therefore, in contrast with skiing techniques, there should be sufficient discussion on this point of a positive impact on the sense of accomplishment from learning by videos watching and practicing. In this study, although the broadcasting time was partially extended to deliver the right techniques to users, it was judged that the purpose of increased satisfaction and sense of achievement was achieved.

5.3. User Satisfaction and Continuous Use Intention

The results of the empirical analysis of Hypothesis 3 show that the path coefficient of user satisfaction is 0.218 and the critical ratio is 4.293 ($p < 0.001$), indicating that the hypothesis was accepted. These results corroborate the findings of previous studies related to information technology. According to Alalwan (2020) [25], the higher the satisfaction of users, the more positive the level of continuous use. The analysis of information about ski techniques through YouTube indicates that it is necessary to provide the information required by individual users at different levels; similarly, Dinhopl and Gretzel (2015) [14], point out that this is a highly important prior factor for continuous use as well as satisfaction. Therefore, information that needs to be expressed using the body in YouTube, such as ski techniques, can be differentiated according to the user's level, and if it includes information by units or steps, this can be released as a meaningful YouTube.

5.4. Perceived Achievement and Continuous Use Intention

The results of the empirical analysis of Hypothesis 4 show that the path coefficient of user satisfaction was 0.372 and the critical ratio was 7.799 ($p < 0.001$), indicating that the hypothesis was accepted. These results can be seen in the same way as those of Janicki and Liegle (2001) [41], who found that the higher the perceived achievement through online lectures, the higher the intention to continue participating. The perceived achievement in this study can be seen as comprising of satisfaction with the selection of a YouTube channel and awareness of self-growth through the information on ski techniques provided online. Moreover, the results of this study corroborate those of Forgeron (2005) [41], who showed that the higher the perceived achievement in online classes, the more continuous participation is. Belanche, Casalón, Orés and Pérez-Rueda (2020) [6], point out the importance of YouTube as a tool to satisfy users' needs, but also suggest that various aspects should be considered when analyzing which attributes will lead to continuous use. Revealed that the higher the performance on online lectures, the higher the intention to continue participating. These results suggest that self-perceived achievement is a more important factor than satisfaction, and that the contribution to the decision of the YouTube channel will also increase. Moreover, as previous studies have pointed out, when the awareness of self-selected learning increases, this will lead to satisfaction and continuous participation, so it is necessary to recognize the importance of the kind of information provided.

Therefore, when providing information on physical activities such as ski techniques through YouTube, it is necessary to include content that will improve the user's level as well as strive to make it easy to understand. Such YouTube videos provide an opportunity for users to change themselves. Kulkarni (2017) [11], also indicated that users prefer channels with high utility when choosing YouTube channels, which is corroborated by this study.

In summary, it is judged that the quality of the YouTube content used in this study played a pivotal role in delivering ski techniques, and enhanced the educational aspect for users, acting as a driving force that increases the level of achievement of users and encourages them to continue to use it.

6. Conclusion and Suggestions

6.1. Theoretical Implications of the Results

The purpose of this study is to provide YouTube users with necessary information and basic data by making available content related to ski technology, verify the relationship between relevant variables, and provide inspiration for unpredictable situations such as pandemics in the future.

In particular, with the emergence of COVID-19, there are restrictions on face-to-face activities, and ski techniques are frequently delivered through YouTube. Thus, it is important to identify the factors of content quality that users require. Second, as a way to enhance user satisfaction in a meaningful direction, the confirmation of the research hypotheses suggests that YouTube creators can increase the quality of the provision sports techniques

through YouTube if they add spoiler preview elements to the channel that users can select and watch.

6.2. Practical Implications of the Results

The practical implications of this study are as follows. First, it was confirmed that YouTube can play an important role in providing and training ski skills in the era of COVID-19. Therefore, better YouTube content can be produced if there is a conversation in the comments about what the user has a need for. Second, there are similarities in the distribution of the age groups among the study subjects, confirming that the content of this study provides useful information for different age groups. Therefore, the results of this study can be used to produce content that can overcome the differences in generations and ski techniques. Third, most of the YouTube content related to ski techniques tend to be biased toward promotion, such as product advertisements. In addition, in the case of educational or informational content, most of the content was of short duration and the depth of the content delivered to users was low. However, the contents produced for this study were about 15 min long, which was judged as sufficient to afford users beneficial results in content as well as information delivery. Fourth, though face-to-face education plays an important role in sports with the same seasonal thresholds, such as ski techniques, the YouTube content produced in this study showed that users can acquire adequate ski techniques non-face-to-face, which constitutes basic data for the use of such content in various other sports.

6.3. Limitations and Future Research

First, non-face-to-face communication is becoming common due to viruses such as COVID-19, and in particular, ski techniques have characteristics that must be acquired through face-to-face activities. However, this study is valuable for clarifying the important role that non-face-to-face content can play in the acquisition of ski techniques. However, one limitation of this study is that only four factors were examined in the process of producing YouTube content. Therefore, future research should examine how users select the factors are necessary for more easily acquiring ski techniques, which could facilitate the continued development of non-face-to-face sports technique instruction. Second, this YouTube content was produced mainly for skiers of all ages, but future studies should examine content produced to be viewed according to gender, ski level, and age group.

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