

## Article

# The Relationship between the Service Quality of IPTV Home Training and Consumers' Exercise Satisfaction and Continuous Use during the COVID-19 Pandemic

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**Abstract:** This study aims to provide operators with measures for successful IPTV utilisation by identifying the quality of IPTV services for home training and analysing the relationship between consumers' exercise satisfaction and continuous use to respond to the COVID-19 era. To achieve the research purpose, people who exercise at home using IPTV home training pro-grams were selected as the sample population. The relationship between efficiency, availability, security, and practicability, which are sub-factors of the service quality of IPTV home training, was analysed for exercise satisfaction and continuous use. The analysis methods include frequency analysis and Cronbach's  $\alpha$  using SPSS 20.0 and AMOS 20.0. Validation was conducted through correlation analysis, confirmatory factor analysis, and structural equation model analysis. In addition, Harman's one-factor verification was conducted to determine the common method bias. All statistically significant levels were set at the  $p < 0.05$  level. The results show that efficiency, availability, security, and practicability have a positive effect on exercise satisfaction, and exercise satisfaction has a positive effect on continuous use. First, during COVID-19, IPTV plays an important role in helping consumers exercise at home and indoors. Second, the subjects of this study showed that individuals 40 years old and older are exercising the most. Therefore, it is assumed that consumers will continue to participate if they provide programs that young people can do. Third, since various human disasters, natural disasters, and other un-predictable phenomena such as COVID-19 are occurring worldwide, policymakers should try to activate programs such as IPTV's home training that can be done indoors.

**Keywords:** service quality of IPTV; exercise satisfaction; continuous use; COVID-19

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## 1. Introduction

Recently, due to COVID-19, the global economy was declining, as enterprises and self-employed individuals suffered losses related to social distancing [1]. In preparation for such changes in the social environment, Hamilton [1] indicated that potential and continuous content should be developed for transformation to competitive companies. Faezipour and Faezipour [2], Kratzke and Cox [3], and Vinay and Vishal [4] also indicated that the use of smartphones, the Internet, or IPTV played an important role in helping with social activities that are difficult to do indoors. Among them, IPTV (Internet Protocol TV) refers to a broadcasting service that transmits content through a broadband network (IP network), allowing real-time access to two-way services through the Internet.

However, although it is easy to carry a smartphone, it can sometimes be infeasible for indoor use. However, network-based IPTV with various multi-channel features has been confirmed for efficient indoor use [5,6]. Garcia-Avilés [7] announced that video content will change the media ecosystem to a multi-platform viewing web, and eMarketer [8] also

claimed that Internet-based media-usage time will be a component of the largest consumer market. This trend will continue in the future.

This trend is the reason for the rapid growth of product transactions through the development of wired/wireless network environments and network commerce of smartphones, tablets, and IPTV. According to the development of the Internet environment for companies and individuals, real-time information can be exchanged anytime and anywhere on the web page through its application and channel [9]. The development of IT (information technology) is used in the medical industry, various service industries, and healthcare. Its effects on consumers based on the level of service provided is becoming important to understand [10]. This is because consumers are divided into loyal or disloyal customers according to the level of service. Therefore, companies that provide real-time information should continue to focus on how the level of service is perceived by consumers [11,12].

IPTV is a multi-channel service providing a variety of information [13]. Since exercise programs have become common, consumers are becoming loyal customers based on the level of programs provided [14]. The main reason why IPTV is attracting attention is that it is more convenient to use than web-based applications, and it provides a cost-free exercise method regardless of time and place. The home training video platform is growing through streaming, broadcasting, and video on demand [15].

Previous studies on IPTV conducted by Darren [16] and Sparks and Browning [17] argued that the quality of Internet-based home training services needs more attention because it could positively or negatively affect consumers' future behaviour, and Puras and Iglesias [18] emphasised the importance of improving IPTV service quality because low levels of IPTV content information will lead to failure in the relationship with customer satisfaction. As shown in previous studies, the importance of IPTV's service quality has been confirmed. IPTV-related research is still insufficient; therefore, further studies need to be conducted.

In the online environment, it is difficult to visually confirm the existence of the supplier, so the website forms a relationship with the customer in the virtual space of the Internet on behalf of the real supplier, which is an important factor in triggering the positive attitude and behaviour of the customer [19].

Generally, service quality is often perceived after in-person contact between the provider and consumer [20]. However, according to Van Riel, Liljander, and Jurriens [21], there is a limit to applying offline service quality-measurement tools in this study to overcome the limitations of previous studies using offline service quality-measurement tools. The online-based service quality-measurement scale by Parasuraman, Zeithaml, and Malhotra [22] was used in this study.

Currently, since COVID-19 has become a global issue, indoor exercise programs should be explored. However, research on continuous home training through IPTV is insufficient. If the efficiency of IPTV is proposed through this study, it can be said that it is different from existing research and can be used as a piece of leading research in related fields.

Thus, the purpose of this study is to identify the service quality of IPTV for continuous home training in response to COVID-19 and provide operators with measures for successful IPTV utilisation by examining the relationship between consumers' exercise satisfaction and continuous use.

## 2. Theoretical Background

### 2.1. Service Quality of IPTV

IPTV refers to a broadcasting service that transmits content over a high-speed Internet protocol (IP) network. Since content is provided using a communication network that has interactive properties rather than a traditional broadcasting network, users can enjoy interactive services using Internet-based services such as information retrieval, games, shopping, real-time broadcasting, and video on demand (VOD) [23]. Although it is different than the existing broadcasting, it also has characteristics similar to smart TVs, such as real-time channels (terrestrial broadcasting, etc.), VOD, and data broadcasting. However, the

greatest advantage of IPTV is that it is expansive and open in its content and application program (OS), which allows consumers to easily access the content that they want [24]. The number of channels that provide home training programs on IPTV has been increasing rapidly due to various offerings [25]. Currently, there are home training programs for indoor exercise operated on CH DIA, Cookie Health, STN Sports, Life and Sports, etc.

Different scholars define E-S-QUAL differently. First, Zeithaml et al. [26] described the entire process in which customers effectively search for, purchase, and deliver products and services using the site, and Santos [27] described e-Consumer evaluation related to service excellence and quality, while Fassnacht and Koese [28] defined the extent to which online services can effectively satisfy customer needs.

It is indicated that there is a limitation in using offline service quality-measurement tools to examine the service quality of IPTV because it differs from general service quality [22]. Thus, Parasuraman, Zeithaml, and Malhotra [23] developed E-S-QUAL, which was supplemented and revised from a quality-measurement scale study in online-based services. The general service quality-measurement factors are classified into factors such as reliability, certainty, tangibility, empathy, and responsiveness, while E-S-QUAL is divided into factors such as efficiency, system availability, fulfilment, and privacy. This measure is based on the importance of mobile and online service qualities; therefore, the measure was proposed to fit the website environment [29,30]. Therefore, to measure the service quality of IPTV in this study, the quality of service must be measured based on the tools presented by Parasuraman et al. in previous studies [23]. The measurement factors proposed by E-S-QUAL were classified into factors such as efficiency, availability (system availability), security (privacy), and practicability (performance) and used in this study. During the COVID-19 pandemic, there has been an interest in safe exercise locations, but empirical research on IPTV home training platforms for indoor exercise is insufficient. Therefore, this study aims to establish a useful theoretical foundation.

## 2.2. Exercise Satisfaction and Continuous Use

Oliver [31] stated that satisfaction refers to the composite emotion generated by consumers from existing emotions and consumption experiences when consumers experience an expected mismatch. Because of the perceived discrepancy between prior expectations of service and the perceived result after purchase, it is very important for an enterprise to understand how much it is affected by a customer's consumption experience [32]. Nielsen [33] defined the overall satisfaction that users form after using the website as perceived satisfaction by users rather than the objective performance or quality of the website. defined it as the degree of reflection of positive feelings perceived by service users from possession or use, which can be expressed as an evaluation of emotions [34].

This study looks at the relationship between IPTV and satisfaction based on the above definition of satisfaction. In addition, the relationship between IPTV service quality and satisfaction will play an important role in attracting new customers, and continuous research should be conducted [35]. IPTV provides various content, and consumers can easily access the content they want. During the COVID-19 pandemic, people have been drawn to indoor activities; thus, the use value of IPTV will be further improved. Malina [36] emphasised the importance of exercise satisfaction, indicating that body composition continuously changes from infancy to adulthood. Regular physical activity plays an important role in body composition and is an important factor in leading a positive life. When consumers are satisfied with an exercise program, they will continue to participate. Suki [37] also indicated that improving consumer satisfaction can lead to future purchases. Therefore, a multidimensional approach to relevant research should be implemented. Kassim and Asiah [38] mentioned the importance of satisfaction because it affects consumer loyalty. Kuo, Wu, and Deng [39] confirmed that the additional service quality factors offered online positively affect perceived value and satisfaction, which leads to future purchases. According to the previous studies mentioned above, consumers who are satisfied with exercise through IPTV are expected to repurchase for continuous use. Furthermore, the

reason for emphasizing research on consumer satisfaction is that the relationship between companies and consumers will constantly change due to industrialisation, development of IT, and current issues.

### 2.3. Research Hypothesis

The service quality of IPTV home training includes interactions with customers on IPTV and online and facilitates all searching, purchasing, and delivering of goods and services efficiently and effectively [23]. However, since online-based services such as IPTV have different characteristics than offline services, such as accessibility and personal information issues, there is a limitation in measuring online service quality using traditional service quality-measurement tools [40].

Therefore, in this study, the relationship between factors and online service quality were measured using E-S-QUAL, developed by Parasuraman et al. [23]. In particular, as a study on the effect of the application of service quality factors based on consumer satisfaction with home exercise programs, this study aims to provide specific quality management factors for application operators.

Parasuraman, Zeithaml, and Berry [21,41] and Cronin and Taylor [42] conducted service quality research. Their research found that there is a positive relationship between service quality and consumer satisfaction. However, there is a need for a new service quality evaluation tool in special environments such as online or IPTV [43]. Thus, the research conducted by Parasuraman et al. [23] showed that online service quality has a great impact on consumer satisfaction and future purchases. Cao, Gupta, and Yang [44]; Bansal and Gefen [45]; and Rahimnia and Hassanzadeh [46] also indicated that the sub-factor of service quality suggested by Parasuraman et al. [23] was an important factor driving consumer satisfaction.

Previous researchers have asserted that service quality increases customer satisfaction, which in turn leads to an increase in customer loyalty, and their studies have paid attention to the mediating effect of customer satisfaction in this process [47]. In addition, researchers found that service quality can have a direct and significant effect on customer loyalty [48]. In other words, excellent service quality can induce positive post-purchase behaviour from consumers. Parasuraman et al. [47] measured the service quality of online shopping malls in the four dimensions of SERVQUAL and analysed the effect on reuse. As a result, efficiency appeared to have a positive effect on reuse. Therefore, the following hypotheses were established based on the theories and results of previous studies.

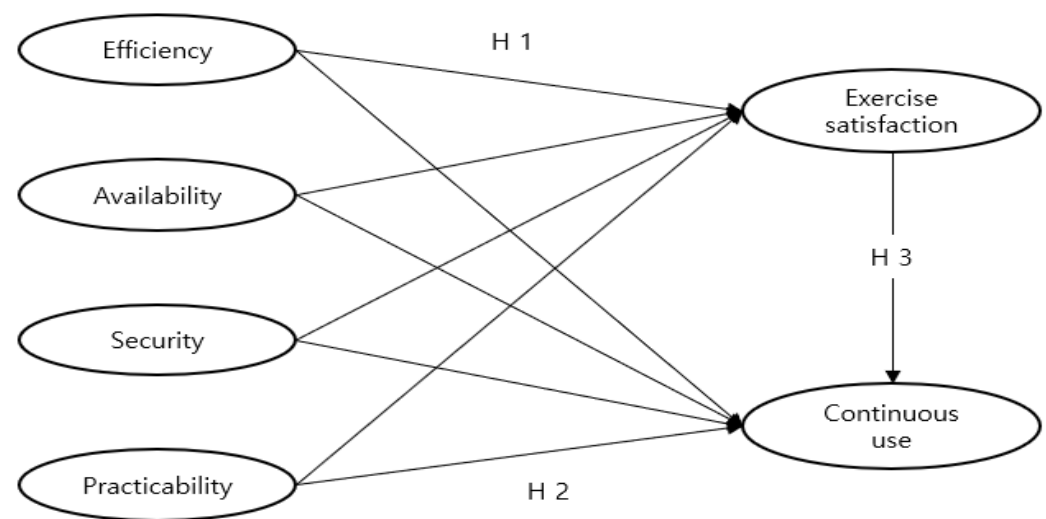
In addition, Wolfinbarger and Gilly [48] and Kim et al. [49] indicated that consumer satisfaction affects customer behaviour, and an influential relationship on continued use is created. According to the theories and results of previous studies, the following hypotheses were established:

All the 3 hypotheses are shown in Figure 1.

**Hypothesis 1 (H1):** *The efficiency, availability, security, and practicability of IPTV home training service quality sub-factors will have an effect on exercise satisfaction.*

**Hypothesis 2 (H2):** *The efficiency, availability, security, and practicability of IPTV home training service quality sub-factors will affect reuse.*

**Hypothesis 3 (H3):** *The exercise satisfaction of IPTV home training service quality will have an effect on continuous use.*



**Figure 1.** Proposed model of the structural relationships.

### 3. Research Method

#### 3.1. Subject of Research

The research subjects were limited to those who lived in G City, Gyeongsangbuk-do, from March 2020 to July 2020 and exercised at home using the IPTV home training program (CH DIA, Cookie Health, STN Sports, Life & Sports) during COVID-19. Additionally, in order to meet the purpose of this study, those who participated in the IPTV home training program for at least three months were selected. This is because exercise programs take a minimum of three months to be effective, as shown in related studies and theories. This research is significant because there is no other research centred on in-home exercise programs during COVID-19. Therefore, the results of this study can be used with significance important.

The subjects confirmed that they were actively participating in related programs through pre-interviews and were informed of the purpose of the study related to home training before answering the questionnaire. Convenience sampling was used as the sampling method to confirm the study subjects. The pre-interview and questionnaire were conducted in the office or laboratory after securing a minimum health distance (2 m) between the researcher and subject due to COVID-19. The study subjects used a convenient sampling method in consideration of the pandemic situation of COVID-19. The specific characteristics of the subjects are shown in Table 1.

#### 3.2. Survey Tools

The survey tools used in this study are questionnaires. The specific details are as follows:

First, based on E-S-QUAL [23], the service quality of home training consisted of five items for efficiency, four items for practicability, four items for availability, and three items for security.

Second, based on the satisfaction study of Donio, Massari, and Passiante [50] and Deng, Lu, Wei, and Zhang [51], exercise satisfaction was composed of four items.

Third, continuous use consisted of four items based on the studies of Dick, Jain, and Richardson [52] and Lu, Yang, Chau, and Cao [53], and the scale of the total questionnaire was composed of a 5-point Likert scale.

#### 3.3. Data Processing Method

The data processing methods used in this study are described in this section. The final effective samples were selected from the survey samples distributed and collected by using



the questionnaire, and they were analysed using SPSS WIN Ver. 20.0 and AMOS 20.0. Those who did not complete the questionnaire or submitted insincere responses were excluded.

First, SPSSWIN 20.0 was used to conduct frequency analysis, reliability test (Cronbach's  $\alpha$ ), and correlation analysis, while hypothesis verification was performed through confirmatory factor analysis and structural equation model analysis, which was carried out using AMOS 20.0. All statistical significance levels were set at  $p < 0.05$ . In addition, Harman's one-factor verification was conducted to determine the common method bias.

**Table 1.** Characteristics of the sample population (n = 330).

Variable	Variable	Frequency	%
Gender	Male	128	38.8
	Female	202	61.2
Age	20s	18	5.5
	30s	79	23.9
	40s	119	36.1
	Above 50	114	34.6
Marital status	Unmarried	112	36.4
	Married	210	63.6
Education level	Junior college	30	9.1
	Bachelor's degree	156	47.2
	Above master's degree	144	43.6
Monthly income	Under 2 million (KRW)	92	27.9
	2–4 million (KRW)	101	30.6
	Above 4 million (KRW)	137	41.5
Frequency of training	Once a week	54	16.4
	Twice a week	104	31.5
	3 times a week	62	18.8
	Above 4 times a week	110	33.3
Total		330	100.0

## 4. Results

### 4.1. Confirmatory Factor Analysis and Harman's One-Factor Test

The results of the confirmatory factor analysis are shown in Table 2. First,  $\chi^2 = 557.600$   $df = 223$ , comparative fit index (CFI) = 0.934, Tucker–Lewis index (TLI) = 0.918, RMSEA = 0.068, and  $p < 0.001$  show a desirable level of fitness. Based on the goodness-of-fit criteria, CFI and TLI are considered good fits when the adoption criteria are higher than 0.90, and the RMSEA adoption criteria are less than 0.08. This confirms that the analysis results of this study are suitable. In addition, in order to confirm the validity of convergence, the t-value, average variance extracted (AVE), and conceptual reliability of the factor load for the final extracted items and component factor were verified. Bagozzi and Yi [54] pointed out that when the conceptual reliability value is more than 0.6, and AVE value is greater than 0.5, it shows high reliability. This confirms that there is no problem in using the structural equation model for the main purpose of this study. In addition, we performed statistical analyses to assess the severity of common method bias. A Harman one-factor test was conducted on the six conceptually important variables in our theoretical model [55]. The results from this test showed that six factors are present, and the most covariance explained by one factor is 20.18 percent, indicating that common method biases are not a likely contaminant of our results. Therefore, there is no common method bias.

**Table 2.** Result of confirmatory factor analysis.

	Item	Estimate	S.E.	t (***)	C.R.	AVE
Efficiency	It is easy to understand the information of this IPTV home training.	0.612				
	The information provided by this IPTV home training is reliable.	0.782	0.121	10.547		
	The ratio of images and videos in this IPTV home training is appropriate.	0.519	0.091	9.597	0.880	0.728
	It is easy to use the system of this IPTV home training.	0.692	0.117	9.917		
	This IPTV home training is well organized.	0.666	0.126	9.620		
Availability	The information what I want is provided exactly in this IPTV home training.	0.868				
	The content response speed of this IPTV home training is fast.	0.684	0.057	13.384	0.883	0.790
	The content composition of this IPTV home training is appropriate.	0.728	0.061	14.554		
	The time of content provided in IPTV home training is appropriate.	0.680	0.048	13.369		
Security	My information in this IPTV home training is well protected.	0.825				
	My information is not shared elsewhere.	0.873	0.055	19.321	0.855	0.814
	The security level of this IPTV home training is reliable.	0.856	0.049	18.853		
Practicability	It is easy to run the content that I want.	0.870				
	The content of IPTV home training is executed immediately.	0.895	0.054	18.493	0.882	0.801
	There are few errors when running IPTV home training.	0.705	0.065	13.158		
	It is easy to use IPTV home training anytime, anywhere.	0.492	0.050	9.265		
Exercise Satisfaction	I am satisfied with choosing this IPTV home training (program).	0.797				
	It is a wise decision to choose this IPTV home training (program).	0.839	0.057	20.011	0.901	0.799
	The service received through this IPTV home training (program) was good.	0.870	0.071	17.96		
	I am satisfied with the accuracy of using this IPTV home training (program).	0.797	0.067	16.398		
Continuous use	This IPTV home training (program) is a home training (program) necessary for exercise.	0.933				
	I am willing to use this IPTV home training (program) frequently.	0.902	0.040	26.408	0.902	0.805
	I will continue to use this IPTV home training (program).	0.615	0.057	12.967		
	I intend to use IPTV home training (program) similar to this IPTV home training.	0.795	0.046	19.923		

$\chi^2 = 557.600$ ,  $df = 223$ ,  $CFI = 0.934$ ,  $TLI = 0.918$ ,  $RMSEA = 0.068$ ,  $p < 0.001$  and \*\*\*  $p < 0.001$ .

#### 4.2. Correlation Analysis and Cronbach's $\alpha$

The results of the correlation analysis are shown in Table 3. Furthermore, since the correlation between the potential factors was less than 8, it was determined that there was no multicollinearity problem. In addition, the Cronbach's  $\alpha$  test showed that it was located between 0.812 and 0.900, meaning that the reliability was secured [56].

**Table 3.** Correlation matrix for the overall measurement model.

Factors	1	2	3	4	5	6
Cronbach's $\alpha$	0.812	0.823	0.888	0.841	0.900	0.883
Efficiency	1					
Availability	0.197 ***	1				
Security	0.341 ***	0.027	1			
Practicability	0.248 ***	0.563 ***	0.146 ***	1		
Exercise satisfaction	0.484 ***	0.076	0.643 ***	0.009	1	
Continuous use	0.382 ***	0.067	0.520 ***	0.026	0.735 ***	1

\*\*\*  $p < 0.001$ .

#### 4.3. Research Model Fitness and Path Model Results

The results of the goodness-of-fit and path models of the study model indicated that the parameters of the structural model used the maximum likelihood method (ML). The goodness-of-fit test results are shown in Table 4. The CFI was 0.942 ( $>0.900$ ), TLI was 0.927 ( $>0.90$ ), and RMSEA was 0.064 ( $<0.080$ ), indicating that the study model was suitable.

**Table 4.** The goodness of fit for the structural equation model.

The Level of Goodness-of-Fit	$\chi^2$	df	CFI (>0.900)	TLI (>0.900)	RMSEA (<0.080)
Fit index	516.603	221	0.942	0.927	0.064

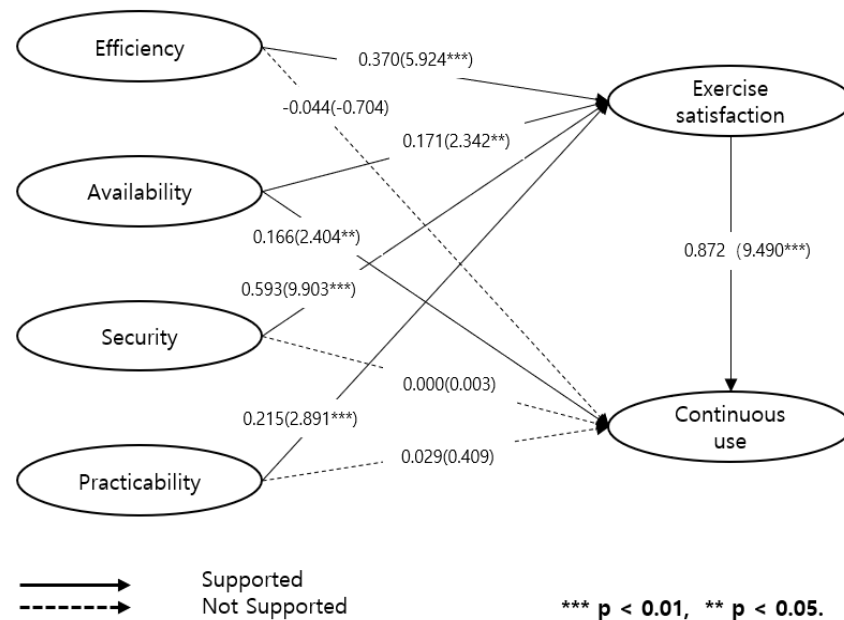
#### 4.4. Hypothesis Verification

The hypothesis verification results set up in this study are shown in Table 5. The specific details of hypothesis adoption are described in this section. Figure 2 summarizes the estimated results of the proposed research model

**Table 5.** Verification result of all hypotheses proposed in this study.

Hypothesis	Pathway	Estimate	S.E.	C.R.	Support/Not
H1	Efficiency	0.477	0.081	5.924 ***	Supported
	Availability	0.110	0.047	2.342 **	Supported
	Security	0.455	0.046	9.903 ***	Supported
	Practicability	0.160	0.055	2.891 ***	Supported
H2	Efficiency	−0.070	0.099	−0.704	Not supported
	Availability	0.133	0.055	2.404 **	Supported
	Security	0.000	0.066	0.003	Not supported
	Practicability	0.026	0.064	0.409	Not supported
H3	Exercise satisfaction	1.081	0.114	9.490 ***	Supported

\*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ .

**Figure 2.** Results of the structural equation model.

As a result of empirical analysis for Hypothesis 1, the path coefficient of efficiency was 0.370, and the critical ratio was 5.924 ( $p < 0.001$ ); the availability path factor was 0.171, the critical ratio was 2.342 ( $p < 0.05$ ), the security path factor was 0.593, and the critical ratio was 9.903 ( $p < 0.001$ ). In execution, the sex path coefficient was 0.215, and the critical ratio was 2.891 ( $p < 0.01$ ), so all sub-factors of the hypothesis were accepted. As a result of empirical analysis for Hypothesis 2, the path coefficient of availability was 0.166, and the critical ratio was 2.404 ( $p < 0.05$ ). However, as the factors of efficiency, security, and feasibility were



not statistically significant, the hypothesis was partially accepted. As a result of empirical analysis for Hypothesis 3, the path of exercise satisfaction in home training service quality exercise satisfaction will have an effect on reuse.

## 5. Conclusions

### 5.1. Home Training Service Quality and Exercise Satisfaction

First, the efficiency of the home training service quality has a positive effect on exercise satisfaction. The perceived efficiency of IT through a website has a positive effect on consumer acceptance and is an important variable that affects online customer satisfaction [57,58]. As a way to increase trust in information on home training channels, IPTV will be more efficient if it uses content to further manage research materials and descriptions of images to help them understand movement behaviour. It is expected to lead to continuous exercise satisfaction of consumers using IPTV, and the suggestion of effective exercise measures will be proposed. Parasuraman et al. [22] indicated that there should be a higher focus on the efficiency of service quality as an important variable that directly affects consumers. Therefore, it is expected that increased efficiency through continuous IPTV utilisation will lead to continuous participation by consumers.

Second, the availability of home training service quality has a positive effect on exercise satisfaction. This is supported by Wang, Shen, and Sun [59]. For home training using IPTV, there should be no inconvenience during use by consumers, and the IPTV training programs should be able to respond immediately. Cao, Gupta, and Yang [44] also indicated that there should be no information interruptions or errors, which will increase trust and satisfaction. Therefore, it was determined that IPTV service quality is an important factor in driving consumers to participate in continuous exercise.

Third, the security of home training service quality has a positive effect on exercise satisfaction. While using the contents of IPTV for home training, there is always anxiety about personal information. Bansal and Gefen [45] reported that accurate management of consumers' personal information can lead to positive consumption behaviour. McKnight, Choudhury, and Kacmar [19] also stated that the safety of personal information in e-commerce is an important prerequisite for continuous consumer satisfaction. Therefore, factors such as payments and personal information exchanged within IPTV will help drive conversion to continuous IPTV use when communicating with consumers regarding privacy practices.

Fourth, the practicability of the home training service quality has a positive effect on exercise satisfaction. Rahimnia and Hassanzadeh [46] stated that consumers will not use IPTV if it is difficult or complicated. Koufairs and Hampton-Sosa [60] and Lin [61] also claimed that if the structure is more manageable to the operator than the consumer, it leads to dissatisfaction. Therefore, since IPTV service quality has a direct effect on consumers, developing related factors will contribute significantly to the continued use of IPTV.

Although IPTV managers believe that the information levels and quality of home training are important, it should also provide basic information that is easy to use and convenient, with no operational errors. In addition, it is necessary to constantly monitor the network and content level to prevent errors with basic services, such as streaming errors, video quality, and instant view.

### 5.2. Home Training Service Quality and Continuous Use

As a result of the verification of Hypothesis 2, the availability factor of the home training service quality factor has a positive effect on reuse, supporting the claim in previous studies that service quality affects reuse [22]. showed that efficiency had an effect on reuse, but this study found that availability had an effect. This is thought to be the result of an increase in time spent at home or indoors due to COVID-19. Therefore, it is necessary to provide the desired information and response speed to the consumers who use IPTV quickly and to provide the content provision time appropriately. On the other hand, the remaining factors such as efficiency, security, and practicability do not appear to be

statistically significant for reuse, so it is necessary to seek ways to increase efficiency, security, and practicability to increase IPTV reuse.

### *5.3. Exercise Satisfaction and Continuous Use*

Hypothesis 2: The exercise satisfaction due to the home training service quality has a positive effect on continuous use. These results reaffirmed that satisfaction with online service quality is a prerequisite for continuous use, as argued by Wolfinbarger and Gilly [48]. Higher satisfaction with the service results in a more positive effect on customer behaviour. Therefore, this study supports prior studies' findings that the exercise satisfaction of IPTV's service quality increases the intent of continuous use, which was shown by Wolfinbarger and Gilly [48] and Reicheld and Schefter [61].

Research on IPTV service quality has led to positive exercise satisfaction for consumers through various factors. Such satisfaction plays an important role in driving continuous use. Moreover, availability of IPTV service quality has a positive effect on reuse. Therefore, if real-time chatting or text messages are used to understand the service quality required by consumers who exercise through the home training channel, these methods can be used as a sustainable home training strategy. In addition, IPTV requires a configuration that can communicate with consumers at all times because consumers can leave and visit other websites or online programs.

### *5.4. Theoretical Implication through Results*

In response to COVID-19, this study attempted to identify the service quality of continuous IPTV home training and examine the relationship between exercise satisfaction and consumers' continuous use. In particular, the result of this study also has great significance in analysing continuously feasible home training with high research values, which suggests a theoretical framework for related research. In line with Parasuraman et al. [22], this study was conducted by applying E-S-QUAL, which is suitable for the website environment, and the validity and reliability of E-S-QUAL were determined. This study supports the existing research. Second, all the research hypotheses established in this study were accepted, and the results supported the theory. Therefore, based on the results of these hypotheses, the foundation for subsequent studies has been established.

### *5.5. Limitation and Suggestion for Future Research*

The practical implications of this study are described in this section. First, during COVID-19, IPTV has played an important role in helping consumers exercise at home and indoors. Therefore, it is assumed that more consumers will use IPTV programs if factors, such as comments and texts, which allow consumers to participate in guiding new exercise events or methods, are used. Second, the subjects of this study showed that individuals 40 years old and older are exercising the most. Therefore, it is assumed that consumers will continue to participate if they provide programs that young people can do. Third, since various human disasters, natural disasters, and other unpredictable phenomena such as COVID-19 are occurring worldwide, policymakers should try to activate programs such as IPTV's home training that can be done indoors. Finally, due to the investigation of COVID-19, the sample size may not be large enough, so it is necessary to conduct more investigations on respondents in the future research.

### *5.6. Practical Implication of Results*

First, this study focused on service quality, exercise satisfaction, and continuous use of IPTV to develop continuous home training in response to COVID-19. However, the study does not compare or examine home training factors that are provided on the Internet or mobile devices. Therefore, this will present an opportunity to reform it as a meaningful online exercise program study. Second, further investigation is needed regarding consumers who use IPTV for home training, the analysing segmented markets, and developing programs that are suitable for their target audience.

Third, most IPTV management methods are not cost-free. However, if public broadcasting companies operate related programs, there will be a new service form. Therefore, if the memorandum of understanding (MOU) is signed with a public corporation to propose a home training program, it will have great significance for the development of related industries. Fourth, there are more professionals who provide training-related information through personal broadcasting or mobile applications. Therefore, they are considered to play an important role in the development of related programs if follow-up research is conducted centred on them.

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## References

1. Hamilton, J. The strategic change matrix and business sustainability across COVID-19. *Sustainability* **2020**, *12*, 6026. [CrossRef]
2. Faezipour, M.; Faezipour, M. Continuous smartphone-based healthcare Systems: A systems engineering approach to assess the efficacy of respiratory monitoring apps. *Sustainability* **2020**, *12*, 5061. [CrossRef]
3. Kratzke, C.; Cox, C. Smartphone technology and apps: Rapidly changing health promotion. *Glob. J. Health Educ. Promot.* **2012**, *15*, 72–82.
4. Vinay, K.; Vishal, K. Smartphone applications for medical students and professionals. *Nitte Univ. J. Health Sci.* **2013**, *3*, 59.
5. Shim, Y.S. A Research on the Differences of VOD Selection between Early Adopters and Other Majority Groups from an IPTV VOD Viewer Standpoint: Proposing a Reasonable IPTV VOD Product Composition to Encourage Actual Usage Rate and Purchases by the Majority Consumer Group. Master's Thesis, The Graduate School of Information Yonsei University, Seoul, Republic of Korea, 2016.
6. So, Y.H. A Study on the Multi-Device Experience Design for IPTV. Master's Thesis, Department of Communication Design, The Graduate School of Communication & Arts Yonsei University, Seoul, Republic of Korea, 2018.
7. García-Avilés, J.A. Roles of audience participation in multiplatform television: From fans and consumers, to collaborators and activists. *Particip. J. Audience Recept. Stud.* **2012**, *9*, 429–447.
8. eMarketer. Growth in Time Spent with Media Is Slowing. 2016. Available online: <https://www.emarketer.com/Article/Growth-Time-Spent-with-Media-Slowing/1014042> (accessed on 6 June 2022).
9. Keng, S.; Lim, E.P.; Shen, Z. Mobile commerce: Promises, challenges and research agenda. *J. Database Manag.* **2001**, *12*, 4–13.
10. Vlachos, P.; Vrechopoulos, A.; Doukidis, G. Exploring consumer attitudes towards mobile music services. *Int. J. Media Manag.* **2003**, *5*, 138–148. [CrossRef]
11. Caldwell, J. Second-shift media aesthetics. In *New Media: Theories and Practices of Digitextuality*; Everett, A., Caldwell, J., Eds.; Routledge: New York, NY, USA, 2003; pp. 3–31.
12. Uricchio, J. Television's next generation: Technology/ Interface Culture/Flow. In *Television after TV: Essays on a Medium in Transition*; Spigel, L., Olsson, J., Eds.; Duke University Press: Durham, UK, 2004; pp. 163–182.
13. Kim, S.; Song, G. Performance of broadcasting contents by platforms. *J. Korea Contents Assoc.* **2015**, *15*, 81–96. [CrossRef]
14. Schreiber, D.; Abboud, O.; Kovacevic, S.; Hoefer, A.; Strufe, T. Social IPTV: A survey on chances and user-acceptance. In Proceedings of the LWA 2010-Workshop-Woche: Lernen, Wissen & Aktivitaet, Kassel, Germany, 4–6 October 2010.
15. Korea Consumer Agency. A Survey on the Consumption of New Type Single-Person Media Focusing on Internet Personal Broadcasting. 2017. Available online: <https://www.kca.go.kr/eng/sub.do?menukey=6007&mode=view&no=1001207256&page=15> (accessed on 10 March 2023).
16. Darren, H. How Blockchain Tech Can Improve the Sports and Fitness Industry with Netflix-Like Streaming Options. *Forbes*. 2018. Available online: <https://www.forbes.com/sites/darrenheitner/2018/05/04/how-blockchain-tech-can-improve-the-sports-and-fitness-industry-with-netflix-like-streaming-options/#5f8f03461597> (accessed on 10 March 2023).
17. Sparks, B.; Browning, V. The impact of online reviews on hotel booking intentions and perception of trust. *Tour. Manag.* **2011**, *32*, 1310–1323. [CrossRef]
18. Puras, J.C.; Iglesias, C.A. Disasters2.0. Application of Web2.0 technologies in emergency situations. *Int. J. Emerg. Manag.* **2009**, *6*, 261–279.

19. McKnight, D.H.; Choudhury, V.; Kacmar, C. The impact of initial consumer trust on intentions to transact with a web site: A trust building model. *J. Strateg. Inf. Syst.* **2002**, *11*, 297–323. [\[CrossRef\]](#)
20. Parasuraman, A.; Zeithaml, V.A.; Berry, L.L. Reassessment of expectations as a comparison standard in measuring service quality: Implications for further research. *J. Mark.* **1994**, *58*, 111–124. [\[CrossRef\]](#)
21. Van Riel, A.; Liljander, V.; Jurriens, P. Exploring consumer evaluations of e-Services: A portal site. *Int. J. Serv. Ind. Manag.* **2001**, *12*, 359–377. [\[CrossRef\]](#)
22. Parasuraman, A.; Zeithaml, V.A.; Malhotra, A. E-S-QUAL: A multiple-item scale for assessing electronic service quality. *J. Serv. Res.* **2005**, *7*, 213–233. [\[CrossRef\]](#)
23. Kim, Y.J. A Comparative Study on Consumer Choice of Cable TV and IPTV. Master's Thesis, Major in Master of Business Administration, Graduate School of Business, Hannam University, Daejeon, Republic of Korea, 2017.
24. Lee, S.T. *KERIS Issue Report (The Concept and Direction of Standard Platform for Smart Education)*; Korea Education and Research Information Service: Daegu, Republic of Korea, 2011.
25. Lim, C.M.; Kim, S.C. Why do Korean users intend to subscribe to global OTT service through their local IPTV service? *Telecommun. Policy* **2023**, *47*, 102541. [\[CrossRef\]](#)
26. Zeithaml, V.A.; Parasuraman, A.; Malhotra, A. *A Conceptual Framework for Understanding e-Service Quality: Implication for Future Research and Managerial Practice*; MSI Working Paper Series No. 00-115; Marketing Science Institute: Cambridge, MA, USA, 2000; pp. 1–49.
27. Santos, J. E-Service Quality: A Model of Virtual Service Dimensions. *Manag. Serv. Qual.* **2003**, *13*, 233–247. [\[CrossRef\]](#)
28. Fassnacht, M.; Koese, I. Quality of Electronic Services: Conceptualizing and Testing a Hierarchical Model. *J. Serv. Res.* **2006**, *9*, 19–37. [\[CrossRef\]](#)
29. Barnes, S.T.; Vidgen, R. An evaluation of cyber-bookshops; The WebQual method. *Int. J. Electron. Commer.* **2001**, *6*, 6–25. [\[CrossRef\]](#)
30. Iwaarden, J.V.; Wiele, T.V.D. Applying SERVQUAL to Web sites; An exploratory study. *Int. J. Qual.* **2003**, *20*, 919–935. [\[CrossRef\]](#)
31. Oliver, R.L. Whence consumer loyalty? *J. Mark.* **1999**, *63*, 33–44. [\[CrossRef\]](#)
32. Oliver, R.L.; Swan, J.E. Consumer perceptions of interpersonal equity and satisfaction in transactions: A field survey approach. *J. Mark.* **1989**, *53*, 21–35. [\[CrossRef\]](#)
33. Nielsen, J. *Designing Web Usability: The Practice of Simplicity*; New Riders Publisher: Indianapolis, IN, USA, 2000.
34. Cronin, J.J., Jr.; Brady, M.K.; Hult, G.T.M. Assessing the Effects of Quality, Value, and Customer Satisfaction on Consumer Behavioral Intentions in Service Environments. *J. Retail.* **2000**, *76*, 193–218. [\[CrossRef\]](#)
35. Graham, C.; Cheverst, K.; Howard, S.; Kjeldskov, J.; Vetere, F. Trust in mobile guide design: Exploiting interaction paradigms. In Proceedings of the OzCHI 2004, Wollongong, Australia, 22–24 November 2004.
36. Malina, R.M. Body composition in athletes: Assessment and estimated Fatness. *J. Clin. Sport. Med.* **2007**, *26*, 37–68. [\[CrossRef\]](#)
37. Suki, N.M. A structural model of customer satisfaction and trust in vendors involved in mobile commerce. *Int. J. Bus. Sci. Appl. Manag.* **2011**, *6*, 17–30.
38. Kassim, N.; Asiah Abdullah, N. The effect of perceived service quality dimensions on customer satisfaction, trust, and loyalty in e-commerce settings: A cross cultural analysis. *Asia Pac. J. Mark. Logist.* **2010**, *22*, 351–371. [\[CrossRef\]](#)
39. Kuo, Y.F.; Wu, C.M.; Deng, W.J. The relationships among service quality, perceived value, customer satisfaction, and post-purchase intention mobile value-added services. *Comput. Hum. Behav.* **2009**, *25*, 887–896. [\[CrossRef\]](#)
40. Cox, J.; Dale, B. Service quality and e-commerce; An exploratory analysis. *Manag. Serv. Qual.* **2011**, *11*, 121–131. [\[CrossRef\]](#)
41. Parasuraman, A.; Zeithaml, V.A.; Berry, L.L. A conceptual model of service quality and its implications for future research. *J. Mark.* **1985**, *49*, 41–50. [\[CrossRef\]](#)
42. Cronin, J.J.; Taylor, S.A. Measuring service quality; A reexamination extension. *J. Mark.* **1992**, *56*, 55–68. [\[CrossRef\]](#)
43. Loiacono, E.; Weston, R.T.; Goodhue, D. WebQual™: A Web Site Quality Instrument. In Proceedings of the American Marketing Association: Winter Marketing Educators' Conference, San Antonio, TX, USA, 5–8 February 2000; pp. 1–12.
44. Cao, Y.; Lu, Y.; Gupta, S.; Yang, S. The effects of differences between e-commerce and m-commerce on the consumers' usage transfer from online to mobile channel. *Int. J. Mob. Commun.* **2014**, *13*, 51–70. [\[CrossRef\]](#)
45. Bansal, G.; Gefen, D. The role of privacy assurance mechanisms in building trust and the moderating role of privacy concern. *Eur. J. Inf. Syst.* **2015**, *24*, 624–644. [\[CrossRef\]](#)
46. Rahimnia, F.; Hassanzadeh, J.F. The impact of website content dimension and e-trust on e-marketing effectiveness: The case of Iranian commercial saffron corporations. *Inf. Manag.* **2013**, *50*, 240–247. [\[CrossRef\]](#)
47. Parasuraman, A.; Zeithaml, V.A.; Berry, L.L. SERVQUAL: A Multiple- Item Scale for Measuring Consumer Perceptions of Service Quality. *J. Retail.* **1988**, *64*, 140.
48. Wolfinbarger, M.; Gilly, M.C. Etailq: Dimensionalizing, measuring and predicting etail quality. *J. Retail.* **2003**, *79*, 183–198. [\[CrossRef\]](#)
49. Kim, J.; Jin, B.; Swinney, J.L. The role of etail quality, e-satisfaction and e-trust in online loyalty development process. *J. Retail. Serv.* **2009**, *16*, 239–247. [\[CrossRef\]](#)
50. Donio, J.; Massari, P.; Passiante, G. Customer satisfaction and loyalty in a digital environment: An empirical test. *J. Consum. Mark.* **2006**, *23*, 445–457. [\[CrossRef\]](#)

51. Deng, Z.; Lu, Y.; Wei, K.K.; Zhang, J. Understanding customer satisfaction and loyalty: An empirical study of mobile instant messages in China. *Int. J. Inf. Manag.* **2010**, *30*, 289–300. [[CrossRef](#)]
52. Dick, A.; Jain, A.; Richardson, P. Correlates of store brand proneness: Some empirical observations. *J. Prod. Brand Manag.* **1995**, *4*, 15–22. [[CrossRef](#)]
53. Lu, Y.; Yang, S.; Chau, P.Y.; Cao, Y. Dynamics between the trust transfer process and intention to use mobile payment services: A cross-environment perspective. *Inf. Manag.* **2011**, *48*, 393–403. [[CrossRef](#)]
54. Bagozzi, R.; Yi, Y. On the evaluation of structural equation models. *J. Acad. Mark. Sci.* **1988**, *16*, 74–94. [[CrossRef](#)]
55. Podsakoff, P.M.; MacKenzie, S.B.; Lee, J.Y.; Podsakoff, N.P. Common method biases in behavioral research: A critical review of the literature and recommended remedies. *J. Appl. Psychol.* **2003**, *88*, 879–903. [[CrossRef](#)] [[PubMed](#)]
56. Nunnally, J.C.; Bernstein, I.H. *Psychometric Theory*; McGraw-Hill: New York, NY, USA, 1994.
57. Agag, G.M.; El-Masry, A.A. Why do consumers trust online travel websites? Drivers and outcomes of consumer trust toward online travel websites. *J. Travel Res.* **2017**, *56*, 347–369. [[CrossRef](#)]
58. Koufaris, M.; Hampton-Sosa, W. The development of initial trust in an online company by new customers. *Inf. Manag.* **2004**, *41*, 377–397. [[CrossRef](#)]
59. Wang, N.; Shen, X.L.; Sun, Y. Transition of electronic word-of-mouth services from web to mobile context: A trust transfer perspective. *Decis. Support Syst.* **2013**, *54*, 1394–1403. [[CrossRef](#)]
60. Lin, J.C.C. Online stickiness: Its antecedents and effect on purchasing intention. *Behav. Inf. Technol.* **2007**, *26*, 507–516. [[CrossRef](#)]
61. Reichheld, F.F.; Schefer, P. Determinants of online banking adoption among ghanaian university students. *Harv. Bus. Rev.* **2000**, *78*, 105–113.

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