

An Empirical Study on the Use Intention to Subscription Economy Service [Extending Technology Acceptance Model with Perceived Enjoyment]

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Abstract: *The subscription economy is growing at a very rapid pace. The subscription economy has already settled in our lives as a new common currency - the long - term relationship between businesses and customers, including the transaction of products or additional product features and services in exchange for recurring customer payment plans. This study analyzed the factors affecting the intention to use the subscription service for Korean subscription service users, focusing on the characteristics of the subscription service. An online survey was conducted to clarify the factors of subscription service adoption and to verify the relationship between variables. A total of 193 questionnaires were collected, and 163 survey results were used as actual analysis data, excluding questionnaires with no subscription service experience and insincere respondents. SPSS 24.0 and AMOS statistical program were used to verify the research hypothesis. Looking at the results of the analysis, variables that influence the Perceived Usefulness of subscription service users were Personal recommendation, Self - efficacy, Reliability, but Price sensitivity was rejected. Self - efficacy was the only variable that affected the Perceived ease of use of subscription service users, and all other variables were rejected. The variables that influence the Perceived Enjoyment of subscription service users were personal recommendation, self - efficacy, and reliability, and price sensitivity was rejected. Finally, perceived usefulness, perceived ease of use has been shown to affect the user's intention to use subscription service, but perceived enjoyment has no effect in this study. These findings help to understand users' perceptions of subscription services and are meaningful in providing basic data for activating subscription services by deriving specific factors that affect users' intention to use subscription services. Also through this study, it was possible to clearly grasp the intention to use the subscription economy service and to provide implications for expanding the intention to use it to consumers.*

Keywords: Subscription Service, Technology Acceptance Model, Price Sensitivity, Perceived Enjoyment, Use Intention

1. Introduction

1.1 Background

The subscription economy is growing at a very rapid pace. The word 'subscription economy' can be unfamiliar to many people. However, the subscription economy has already settled in our lives as a new common currency - the long - term relationship between businesses and customers, including the transaction of products or additional product features and services in exchange for recurring customer payment plans. Not long ago, Netflix's stock price hit a record high as of April 15, 2020. Of course, because of COVID - 19's influence, people cannot go out and go to the theater and their increased use of Netflix can affect this result. But it is noteworthy that Netflix, which went public in 2002, is ahead of Disney, the U. S. flagship 100 - year - old company. Other examples are IT companies, which are mired in stagnant growth, have succeeded in improving their constitution by shifting from a business focused on product sales to a business focused on subscription. Instead of selling CDs such as MS Windows and MS Office, Microsoft focused on providing software through subscription services in 2014. Although its operating profit temporarily decreased the following year, effects of subscription models began to appear in earnest the

following year. Over the three years from 2015 to 2018, Microsoft's operating profit increased by 24.5% annually. Sales of Office 365 in the form of subscription surpassed the traditional way of selling licenses from the fourth quarter of 2017, and subscribers increased 110 percent annually from 7.1 million in 2016 to 31.4 million in 2018.

The subscription economy has been spreading to other areas since Netflix's success in providing unlimited streaming videos. Start - up Hutch, which allows users to drink a glass of cocktail every day at hundreds of bars in Manhattan, New York, for \$9.99 a month, posted sales of \$2 million (2.2 billion won) in 2017. In Japan, bars offering unlimited alcohol at a monthly price of 3,000 yen (30,000 won) are thriving. In Korea, you can also drink Americano coffee that costs 29,900 won per month at Wemakeprice's W Cafe. Furthermore, it is spreading to health and medical areas such as health clubs and hospitals. In the field of clothing, cosmetics, and household goods, "regular delivery models" are in the spotlight. The lingerie company Adormi recorded \$100 million in sales in 2017 with a service that delivers personalized underwear and bras. Recently, a so - called "rental evolution model" has emerged that can be used to experience luxury cars. The monthly fixed amount is 600 dollars for Volvo, 2,000 dollars for Porsche, and 1,095 dollars for Mercedes. In June 2020, Hyundai Motor also

released a product in the U. S. that starts at \$279 a month. Economists describe the spread of the subscription economy as "utilization theory. " In other words, it is the result of efforts to gain maximum satisfaction with limited resources and expenses. As Jeremy Rifkin predicted in "The End of Soil, " the era of "connection" and "use" has come to a reality beyond the era of "ownership. " (Hankyong Dictionary.2019)

1.2 Purpose of Research

Various subscription economic sectors have sprung up according to various consumer needs, and the related market will grow violently due to consumers' demand for them. Various subscription economy services will be provided in line with this market situation. Against this backdrop, research on the intent and its factors to use subscription - economy services has important implications. But prior research on subscription services has focused on specific areas such as video services and music services, and has studied users' intention to use them due to factors such as personal innovation, social influence, cost, motivation for use (H. K. BAEK et al., 2013; D. H. KIM & N. K. PARK, 2016), utility, multimedia content, entertainment, price, design (S. S Kim et al., 2011). There have been some studies of the intention of using subscription economy services in recent years, but it is likely to remain to the extent of exploring the intent of use in general values. In addition, few studies have been conducted to consider the reliability of new types of consumption, the price sensitivity due to regular payment, and the satisfaction of convenience functions that can be called the strength of the subscription economy. Based on these problems, this study aims to develop an empirical analysis model in consideration of the characteristics of the subscription economy service and to conduct an analysis on the factors that affect the intention of using the subscription economy. Therefore, this research is needed because it can help predict what factors should be focused on to secure a competitive advantage in the subscription service market.

2. Literature Review & Theoretical Frameworks

2.1 Concepts of Subscription Economy Service

Subscriptions were recognized as the most attractive and efficient consumer activity for millennials (generation born in the early 1980s and early 2000s) who prefer a variety of experiences over permanent ownership (J. H KIM, 2019). Subscription - based business models are more popular than ever, and many consumers prefer to subscribe to products and services on a regular basis than to consume. There are two reasons why such subscriptions have become more popular. First, it provides consumers with improved access to products or services, immediate savings and convenience. Second, corporations can generate revenue repeatedly and improve customer loyalty (Subbit, 2018).

Tien Tsuo, the world's first expert in subscription business

and founder and CEO of Zuora, a corporate subscription economy payment system and software solution company, said, "We need to turn customers into subscribers to generate recurring revenue through service delivery, not through product sales, " referring to this change in the economic environment as 'Subscription Economy'. In other words, a subscription economy is an economic activity by recognizing goods as a concept of consumers subscribing to and using services rather than a concept of ownership (Tienchuo& Gabe Wyzert, 2019; McCarthy et al, 2017). Research has shown that a subscription business model is a way that consumers regularly receive products or services at a certain cost, just as they subscribe to newspapers or magazines.

2.2 User Satisfaction and Technology Acceptance Model

The Technology Acceptance Model (TAM) was designed in 1989 by Davis to predict users' acceptance of new information technology and provide an efficient and theoretically valid explanation of their intention to use it. The Technology Acceptance Model (TAM) among the many proposed models to date is a representative tool for the study of acceptors of technology, and has been used especially in measuring the use of online - based services such as subscription economy as well as technology products (A. R. shraf et al, 2015; H. Eray et al, 2011; J. Ingham et al, 2015; J. H. CHOI, 2015; S. H. LIM, 2012).

Davis suggested the concepts of 'Perceived Usefulness' and 'Perceived Ease of Use' and argued that the two factors affect the behavior of innovative products. The 'Perceived Ease of Use' means that it is not difficult to use a particular technology without requiring much effort and user's attitude, and 'Perceived Usefulness' is the degree to which one believes certain skills will improve one's performance. These in turn affects one's attitude, and in the end, attitudes influence one's own behavior. (I. Ajzen, 1980, J. H. Han, 2015).

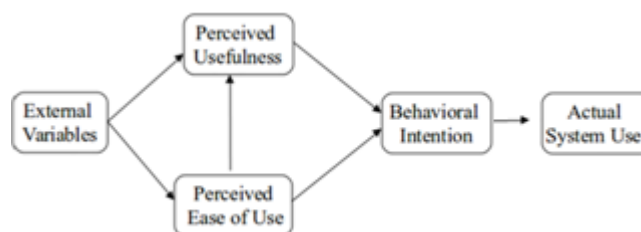


Figure 1: TAM: Technology Acceptance Model

Based on the fact that the previous TAM study shows only external motivations for users and the inherent motivations for the technology itself are excluded, Veysel&Eray (2011) analyzed the intention to use online shopping and its impact on actual purchases using a Technology Acceptance Model that further extends 'Perceived Enjoyment'. Analysis shows that Perceived Enjoyment also affects perceived usefulness and attitude, which affects purchases (H. Eray et al, 2011). Similarly, Ha &Stoel (2009) studied an extended technology acceptance model that utilizes factors of shopping quality, enjoyment and reliability and found that reliability affected Perceived Usefulness and Perceived

Enjoyment, which again affected attitude. Eventually, this attitude appeared to affect online behavior. (J. H. HAN et al, 2015).

3. Empirical Analysis

3.1 Research Hypothesis

H1: Perceived usefulness associated with the subscription economy is higher for individuals with lower price sensitivity.

H2: Perceived ease of use associated with the subscription economy is higher for individuals with lower price sensitivity.

H3: Perceived enjoyment associated with the subscription economy is higher for individuals with lower price sensitivity.

H4: Perceived usefulness associated with the subscription economy is higher for individuals with personal recommendation functions.

H5: Perceived ease of use associated with the subscription economy is higher for individuals with personal recommendation functions.

H6: Perceived enjoyment associated with the subscription economy is higher for individuals with personal recommendation functions.

H7: Perceived usefulness associated with the subscription economy is higher for individuals with higher self - efficacy

H8: Perceived ease of use associated with the subscription economy is higher for individuals with higher self - efficacy

H9: Perceived enjoyment associated with the subscription economy is higher for individuals with higher self - efficacy

H10: Perceived usefulness associated with the subscription economy is higher for individuals with higher reliability

H11: Perceived ease of use associated with the subscription economy is higher for individuals with higher reliability

H12: Perceived enjoyment associated with the subscription economy is higher for individuals with higher reliability

H13: Use intention associated with the subscription economy is higher for individuals with higher perceived usefulness.

H14: Use intention associated with the subscription economy is higher for individuals with higher perceived ease of use.

H15: Use intention associated with the subscription economy is higher for individuals with higher perceived enjoyment.

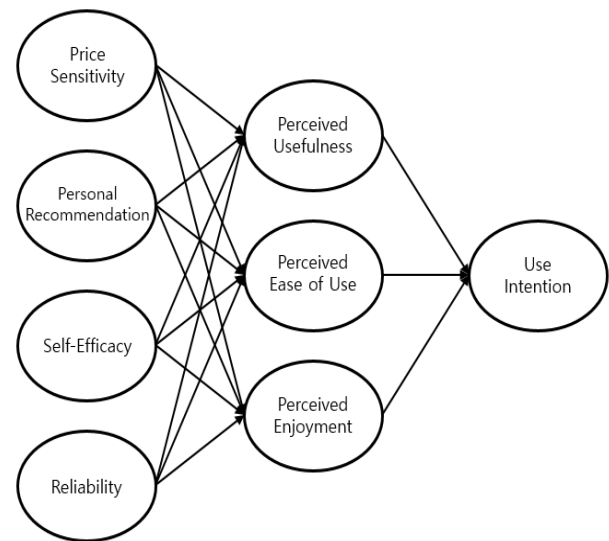


Figure 2: Research Model

3.2 Research Model

As discussed in the theoretical background, the analysis was performed using the expanded technology acceptance model. Price sensitivity, personal recommendation, self - efficacy, reliability were utilized as individual characteristic variables among exogenous variables, and perceived usefulness, perceived ease of use, perceived enjoyment were utilized as parameters. And the intention to use subscription economy services was utilized as a dependent variable. Based on the research by Davis (1989), who proposed the technology acceptance model, the model was used to expand the perceived enjoyment, and each hypothesis and theoretical validity were hypothesized using the preceding studies in Table 1 below.

3.3 Research Method

Table 1: Definition of Variables and Questionnaires

Variables		Sources	Definition	Questionnaires
Independent variable	Price Sensitivity	Jeong Myung - sun et al. (2016). Kim et al. (2013); Kim (2003); Park (2015); Goldsmith & Newell (1997); Nagle (1987)	individual degree of reaction according to the change of the price level of a products or services	price effect, sensitivity, price importance, price barrier
	Personal Recommendation	Gehrt et al. (1996), Berry et al. (2002), Park Wonik & Kang Sang - gil (2013)	Individual degree of recognition of convenience in the personal recommendation function of subscription services	Personalized recommendation based on customer needs, understanding customer interest, intelligence of the function
	Self - efficacy	Agarwal & Karahanna (2000); Bandura (1977); Mort & Drennan (2007)	concept of the combination of the judgement on whether itself has the ability to	difficulty of use, need help at the time of use, efficiency of use, description of how

			perform certain actions and the motivation to promote	to use
	Reliability	Choi et al (2015); Dwyer & Oh (1987); Ha & Stoel (2009); Ingham et al. (2015); Mishra et al (1998); Morgan & Hunt (1994); Wilson (1995)	reliability of the new technology	confidence in use, fairness, honesty, trust of information.
Perception variables	Perceived Ease of Use	Davis (1989); Venkatesh & Davis (2000); Mun & Hwang (2003)	degree of expectation of possible utilization with little effort	clarity of utilization, effort and time utilization, understanding, rapidity
	Perceived Usefulness		high availability, the extent of the use value	understandability, minimality of effort and time, ease
	Perceived Enjoyment	Kim (2010); Lee (2012); Moon & Kim (2001); Bandura (1997); Davis et al (1992); Hackbarth et al. (2003); Koufaris (2002); Rice et al. (1990)	level of interest	Fun, time advantage, pleasure, curiosity satisfied, the mood improvement
Dependent variable	Use Intention	Chen (2000); Fenech (1998), Kim (2019)	degree of impulse to use the product or service.	Usage intent, information utilization, reservation intent

This study modified and supplemented the measurement items for the configuration concepts that have been proven in Reliability and Validity in the preliminary survey, and summarized the measurement items in the questionnaire are as shown in Table 2. The questionnaires used for data collection to verify the structural relationship of the research model proposed in this work consisted largely of five parts.

Table 2: Questionnaire Configuration

Category	Measured Variable	Number of Questions	Measurement Method
External variable	Price Sensitivity	4	7 - point Likert scale (1 point: "strongly disagree", 7 points: "strongly agree")
	Personal Recommendation	3	
	Self - Efficacy	2	
	Reliability	3	
Behavioral beliefs	Perceived Usefulness	3	
	Perceived Ease of Use	3	
	Perceived Enjoyment	3	
Behavioral attitudes	Use Intention	3	

This work utilizes SPSS 24.0 and the AMOS statistics program to validate established research hypotheses and research model. To verify the internal consistency of the survey items, this study conducted an Exploratory Factor Analysis (EFA) to verify the reliability and validity of the measurement items. Next, this study conducted Confirmatory Factor Analysis (CFA) to verify the suitability of the research model using AMOS. After analyzing Convergent Validity and Discriminant Validity among the

components of the variable, we evaluate the suitability of the research model. This study also validates research hypotheses and research models using structural equation modeling (SEM) analysis to determine the overall causal relationship between factors.

4. Research Result

4.1 Factor Analysis and Reliability Analysis

4.1.1 Exploratory Factor Analysis

Factor analysis refers to a technique that analyzes the complex and diverse interrelationships of questionnaire questions, many variables, and identifies the shared/embedded structure between them. This is a technique that binds variables to fewer homogeneous dimensions and facilitates understanding of the data by identifying the shared relationship structure present in these variables based on the correlation between them.

This means that the variables within each factor are highly correlated and are less correlated with the variables contained in the other factors. Given data on several variables and at least some of them are highly correlated with each other, factor analysis provides more concise factors without incurring a significant loss of information. If the feasibility or commonality is low in factor analysis, the question is excluded, and if the question is grouped into other factors (variables), the question is omitted and transformed.

Table 3: Exploratory Factor Analysis

Variables	Factors								Cronbach's Alpha
	Perceived Enjoyment	Personal Recommendation	Perceived Ease of Use	Perceived Usefulness	price sensitivity	Reliability	Use Intention	Self Efficacy	
Perceived Enjoyment2	0.819	0.183	0.233	0.058	-0.006	0.101	0.227	0.022	0.88
Perceived Enjoyment1	0.818	0.216	0.124	0.289	-0.033	0.017	0.125	0.013	

Perceived Enjoyment3	0.789	0.092	0.211	0.243	-0.068	0.226	0.133	0.052	
Personal Recommendation2	0.077	0.924	0.1	0.112	-0.064	0.116	0.105	0.01	0.906
Personal Recommendation1	0.15	0.884	0.033	0.083	-0.021	0.133	0.098	-0.022	
Personal Recommendation3	0.197	0.863	0.039	0.09	-0.039	0.022	0.021	-0.003	
Perceived Ease of Use2	0.148	0.13	0.86	0.036	0.005	-0.018	0.233	0.179	0.857
Perceived Ease of Use3	0.256	0.088	0.718	0.239	-0.053	0.08	0.26	0.223	
Perceived Ease of Use1	0.187	-0.016	0.706	0.295	-0.005	0.187	0.129	0.234	
Perceived Usefulness1	0.245	0.13	0.195	0.752	-0.035	0.236	0.214	0.136	0.865
Perceived Usefulness2	0.237	0.167	0.137	0.75	0.024	0.222	0.218	0.028	
Perceived Usefulness3	0.424	0.17	0.21	0.588	0.05	0.229	0.252	0.022	
price sensitivity3	0.018	-0.04	-0.152	0.108	0.786	-0.184	-0.041	-0.01	0.75
price sensitivity4	-0.05	-0.104	-0.009	-0.145	0.775	-0.072	0.249	0.043	
price sensitivity2	-0.001	0.038	0.087	-0.309	0.739	0.223	-0.277	-0.125	
price sensitivity1	-0.072	-0.015	0.118	0.282	0.699	-0.028	-0.204	0.159	
Reliability2	0.158	0.194	0.056	0.097	-0.107	0.868	0.096	0.089	0.807
Reliability3	0.044	0.006	0.159	0.326	-0.015	0.788	0.144	-0.118	
Reliability1	0.467	0.211	-0.102	0.175	-0.064	0.593	0.131	0.346	
Use Intention3	0.173	0.041	0.245	0.171	-0.067	0.114	0.748	0.189	0.839
Use Intention2	0.229	0.222	0.241	0.188	-0.086	0.227	0.694	0.063	
Use Intention1	0.264	0.094	0.304	0.425	-0.05	0.073	0.682	-0.067	
Self Efficacy2	-0.018	-0.061	0.291	0.097	0.009	0.036	0.031	0.829	0.698
Self Efficacy1	0.15	0.047	0.497	-0.015	0.132	0.033	0.206	0.655	
eigenvalue	2.876	2.728	2.608	2.401	2.32	2.182	2.181	1.505	
% of Variance	11.984	11.367	10.867	10.004	9.666	9.09	9.087	6.269	
Cumulative %	11.984	23.351	34.218	44.222	53.888	62.979	72.065	78.334	
Kaiser - Meyer - Olkin Measure of Sampling Adequacy =.855									
Bartlett's Test of Sphericity. Chi - Square X2=2358.624 (df=276, p<0.01) **									

*p<0.05, **p<0.01 Harman's single factor test= No common method bias

By grouping eight factors through factor analysis, variables were simplified. The orthogonal rotation method, VERIMAX rotation, was used to rotate factors, and the sphericalness verification of KMO and Bartlett were performed simultaneously. For KMO, it is generally considered good if it is higher than 0.7.

KMO is considered good because 0.855 came out. The following is the Bartlett's test that determines whether the use of a factor analysis is appropriate. The use of factor analysis is appropriate because much less than 0.05. The analysis of the factors showed eight factors: Perceived Enjoyment, Personal Recommendation, Perceived Ease of Use, Perceived Usefulness, Price Sensitivity, Reliability, Use Intention, and Self - Efficacy.

Identifying whether repeated measurements for the same concept are likely to result in the same measurement is called reliability verification or Cronbach alpha verification. Usually, papers judge that 0.6 or higher is reliable.

First, looking at Perceived Enjoyment, the value of the reliability is 0.880, showing high confidence. Next, looking at Personal Recommendation, the value of reliability is

0.906, which is very high. Next, when looking at Perceived Ease of Use, the value of reliability is 0.857 which is highly reliable. Next, when looking at Perceived Usefulness, the value of the reliability is 0.865, showing high confidence. The following shows that the value of confidence is 0.750, indicating normal confidence. In the following view of Reliability, the value of the reliability is 0.807, showing high confidence. Next, looking at Use Intention, the value of the reliability is 0.839, showing high confidence. Finally, when we look at Self - Efficacy, the value of the reliability is 0.698, showing a low confidence level.

Pearson's correlation coefficient was used to view the correlation of variables. The correlation coefficient of the correlation analysis has a value between - 1 and +1, and the closer to zero, the less linear the two variables appear to be. If there is (-) in front of the coefficient of correlation, the direction of the two variables is opposite, and (+; no indication) is the correlation of the positive, indicating a linear relationship in the same direction. The characteristic of correlation analysis is that the coefficient of correlation does not change when multiplied, divided, subtracted, or added by a constant constant.

Table 4: Pearson's Correlation Coefficient

	price_sensitivity	Personal_Recommendation	Self_Efficacy	Reliability	Perceived_Usefulness	Perceived_Ease_of_Use	Perceived_Enjoyment	Use_Intention
price_sensitivity	1							
Personal_Recommendation	-0.099	1						
Self_Efficacy	0.071	0.037	1					
Reliability	-0.121	.325**	.187*	1				
Perceived_Usefulness	-0.055	.357**	.264**	.561**	1			
Perceived_Ease_of_Use	-0.042	.211**	.607**	.318**	.524**	1		
Perceived_Enjoyment	-0.097	.380**	.231**	.467**	.619**	.491**	1	
Use_Intention	-.168*	.303**	.325**	.438**	.636**	.600**	.558**	1

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

Looking at price sensitivity and Use Intention, the correlation coefficient was - 0.168, showing a statistically significant negative correlation.

Looking at Personal Recommendation and Reliability, the correlation coefficient is 0.325, showing a statistically significant amount of correlation. Looking at Personal Recommendation and Perceived Usefulness, the correlation coefficient is 0.357, showing a statistically significant amount of correlation.

Looking at Personal Recommendation and Perceived Ease of Use, the correlation coefficient is 0.211, showing a statistically significant amount of correlation. Looking at Personal Recommendation and Perceived Enjoyment, the correlation coefficient is 0.380, which is statistically significant. Looking at Personal Recommendation and Use Intention, the correlation coefficient is 0.303, showing a statistically significant amount of correlation.

Looking at Self Efficacy and Reliability, the correlation coefficient is 0.187, showing a statistically significant amount of correlation. Looking at Self Efficacy and Perceived Usefulness, the correlation coefficient is 0.264, showing a statistically significant amount of correlation. Looking at Self Efficacy and Perceived Ease of Use, the correlation coefficient is 0.607, showing a statistically significant amount of correlation. Looking at Self Efficacy and Perceived Enjoyment, the correlation coefficient is 0.231, showing a statistically significant amount of correlation. Looking at Self Efficacy and Use Intention, the correlation coefficient is 0.325, showing a statistically significant amount of correlation.

When looking at Reliability and Perceived Usefulness, the correlation coefficient is 0.561, showing a statistically significant amount of correlation. When looking at Reliability and Perceived Ease of Use, the correlation coefficient is 0.318, showing a statistically significant amount of correlation. When looking at Reliability and Perceived Enjoyment, the correlation coefficient is 0.467, showing a statistically significant amount of correlation. When looking at Reliability and Use Intention, the correlation coefficient is 0.438, showing a statistically

significant amount of correlation.

Looking at Perceived Usefulness and Perceived Ease of Use, the correlation coefficient is 0.524, which is statistically significant. When looking at Perceived Usefulness and Perceived Enjoyment, the correlation coefficient is 0.619, showing a statistically significant amount of correlation. Looking at Perceived Usefulness and Use Intention, the correlation coefficient is 0.636, showing a statistically significant amount of correlation.

When looking at Perceived Ease of Use and Perceived Enjoyment, the correlation coefficient is 0.491, showing a statistically significant amount of correlation. When looking at Perceived Ease of Use and Use Intention, the correlation coefficient is 0.600, showing a statistically significant amount of correlation.

When looking at Perceived Enjoyment and Use Intention, the correlation coefficient is 0.558, which is statistically significant.

4.2 Confirmatory Factor Analysis

Before proceeding with the structural equation model analysis, confirmatory factor analysis (CFA) was conducted to determine whether the observed variables constituting each latent variable were properly constructed.

In this study, the fit of the model was evaluated through the CFI (Comparative Fit Index), TLI (Tucker - Lewis Index), and RMSEA (Root - Mean Square Error of Approximation), in which the criteria for the fitness evaluation index were established. Among the incremental fit indices, the higher the CFI value and the TLI value, the better the fit of the model is, and if it is approximately 0.9 or higher, it is interpreted as a good fit. On the other hand, the smaller the value of RMSEA (the double root of the mean square of approximate error) is interpreted as a good fit. Very good fit if $RMSEA < .05$, good fit if $RMSEA < .08$, moderate fit if $RMSEA < .10$, and bad fit if $RMSEA > .10$ (Browne & Cudeck, 1993). If the standardized RMR value is less than 0.05~0.08, it is interpreted as appropriate (Hu&Bentler, 1999).

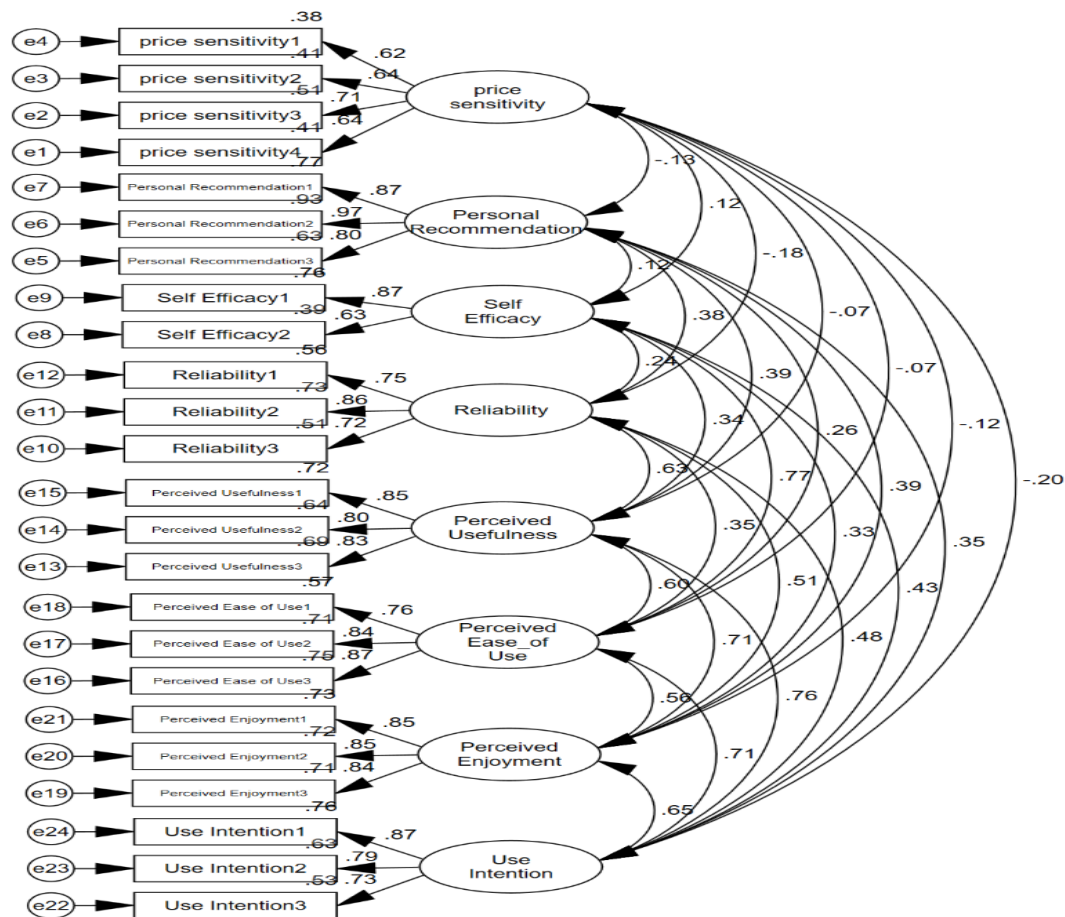


Figure 3: Research Model Evaluation

The incremental fitness index, TLI, showed a standard value of 0.9, and CFI was also higher than the standard value of 0.9. If the SRMR is also 0.1 or less, it can be said that it is suitable. RMSEA, the absolute fitness index, showed a lower value than the standard value of 0.10 and showed a good overall fit, and the confirmatory factor analysis model was judged to be suitable. Of course, the absolute standard of fitness has not been statistically yet, but it is usually said that the above criteria are suitable. In other words, depending on the research, some of the standard values are relative.

Table 5: Verifiable Factor Analysis Fits

χ^2	df	p	TLI	CFI	RMSEA			SRMR
					Value	Lower Bound	Upper Bound	
388.216	224	0	0.909	0.926	0.067	0.056	0.078	0.061

On the other hand, to determine whether each observation reflects the latent variable well in the confirmatory factor analysis, the factor load of the observators was found to be significant, indicating that they reflect the latent variable well. On the other hand, the standardized path coefficient (β) was found to be higher than 0.5, satisfying the concept validity.

			Estimate	S. E.	β	C. R.	P
price_sensitivity4	< -	price_sensitivity	1		0.642		
price_sensitivity3	< -	price_sensitivity	1.246	0.196	0.714	6.341	***
price_sensitivity2	< -	price_sensitivity	1.101	0.182	0.643	6.035	***
price_sensitivity1	< -	price_sensitivity	0.97	0.165	0.62	5.893	***
Personal_Recommendation3	< -	Personal_Recommendation	1		0.795		
Personal_Recommendation2	< -	Personal_Recommendation	1.129	0.081	0.965	13.989	***
Personal_Recommendation1	< -	Personal_Recommendation	1.081	0.083	0.875	13.053	***
Self_Efficacy2	< -	Self_Efficacy	1		0.626		
Self_Efficacy1	< -	Self_Efficacy	1.154	0.168	0.872	6.866	***
Reliability3	< -	Reliability	1		0.715		
Reliability2	< -	Reliability	1.215	0.133	0.857	9.101	***
Reliability1	< -	Reliability	1	0.118	0.746	8.468	***

Perceived_Usefulness3	< -	Perceived_Usefulness	1		0.833		
Perceived_Usefulness2	< -	Perceived_Usefulness	0.94	0.082	0.8	11.51	***
Perceived_Usefulness1	< -	Perceived_Usefulness	0.958	0.077	0.846	12.385	***
Perceived_Ease_of_Use3	< -	Perceived_Ease_of_Use	1		0.866		
Perceived_Ease_of_Use2	< -	Perceived_Ease_of_Use	1.139	0.088	0.84	13.002	***
Perceived_Ease_of_Use1	< -	Perceived_Ease_of_Use	0.965	0.087	0.756	11.142	***
Perceived_Enjoyment3	< -	Perceived_Enjoyment	1		0.841		
Perceived_Enjoyment2	< -	Perceived_Enjoyment	1.016	0.08	0.85	12.662	***
Perceived_Enjoyment1	< -	Perceived_Enjoyment	0.835	0.066	0.852	12.69	***
Use_Intention3	< -	Use_Intention	1		0.73		
Use_Intention2	< -	Use_Intention	1.148	0.119	0.794	9.63	***
Use_Intention1	< -	Use_Intention	1.092	0.105	0.872	10.406	***

Convergent validity means that there must be a high correlation between values measured by different methods in order to measure the same concept. In other words, convergent validity is to verify to what extent a plurality of items measuring the same concept coincide. To test this convergent validity, the Construct Reliability and Average Variance Extracted (AVE) were measured for each variable. Convergent validity evaluation criteria are interpreted as high convergent validity when the concept reliability is 0.7 or more and the average variance extraction value is 0.5 or more.

	CR	AVE
price_sensitivity	0.751	0.53
Personal_Recommendation	0.912	0.776
Self_Efficacy	0.726	0.596
Reliability	0.818	0.601
Perceived_Usefulness	0.866	0.683
Perceived_Ease_of_Use	0.862	0.676
Perceived_Enjoyment	0.885	0.719
Use_Intention	0.842	0.641

Discriminant validity means that there must be a clear difference in the measurement between different variables. To test this discriminant validity, we measured the Average Variance Extracted (AVE) for each variable and calculated the correlation coefficient between the variables.

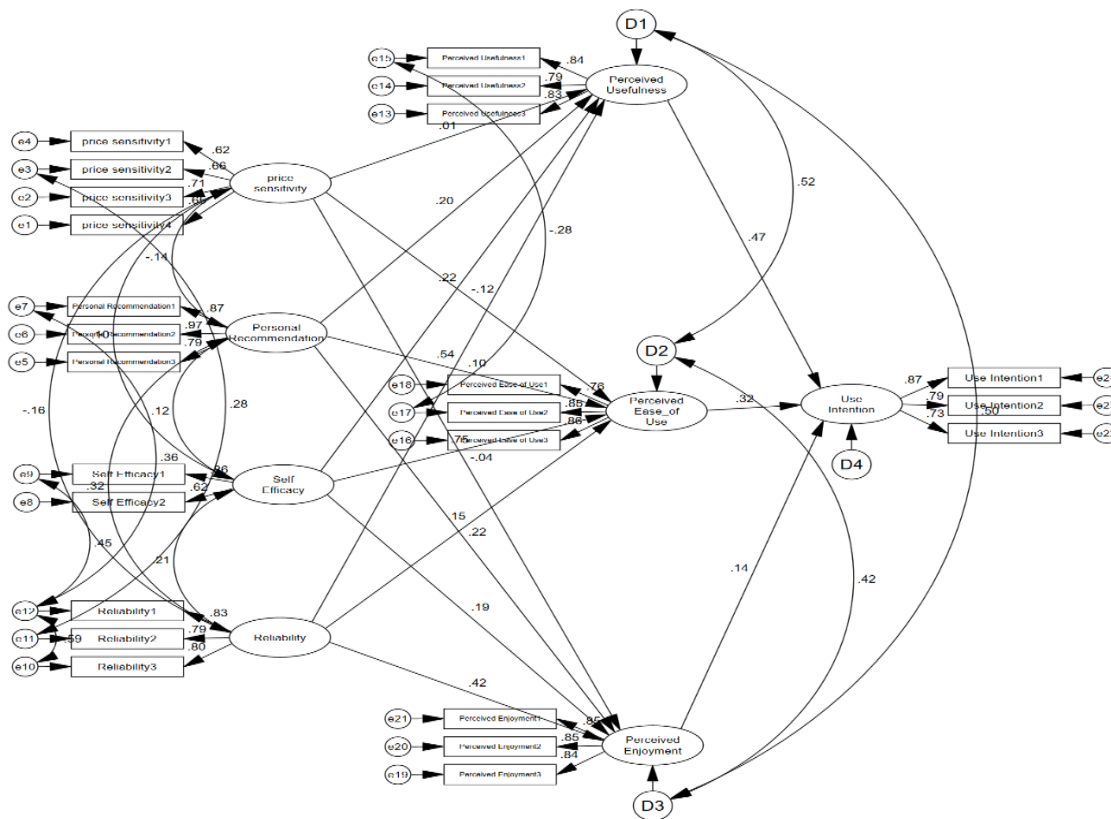
The criterion for evaluating discriminant validity is that the square value of the correlation coefficient between each variable should not exceed the mean variance extraction value. Independent variable correlation squared values were Self Efficacy and Perceived Ease of Use 0.593; the mean variance extraction for each variable was all higher. There was no abnormality in the discrimination validity.

For verification of discriminant validity, we typically select the pair with the highest correlation between conceptually similar variables, as verification between all variables is

very difficult (if there are many variables). The reason for choosing correlation between the highest variables is that the higher the correlation, the less likely the discriminant validity is.

		DV
price_sensitivity	< - Personal_Recommendation	0.018
price_sensitivity	< - Self_Efficacy	0.013
price_sensitivity	< - Reliability	0.031
price_sensitivity	< - Perceived_Usefulness	0.005
price_sensitivity	< - Perceived_Ease_of_Use	0.005
price_sensitivity	< - Perceived_Enjoyment	0.014
price_sensitivity	< - Use_Intention	0.04
Personal_Recommendation	< - Self_Efficacy	0.014
Personal_Recommendation	< - Reliability	0.142
Personal_Recommendation	< - Perceived_Usefulness	0.155
Personal_Recommendation	< - Perceived_Ease_of_Use	0.065
Personal_Recommendation	< - Perceived_Enjoyment	0.152
Personal_Recommendation	< - Use_Intention	0.123
Self_Efficacy	< - Reliability	0.056
Self_Efficacy	< - Perceived_Usefulness	0.118
Self_Efficacy	< - Perceived_Ease_of_Use	0.593
Self_Efficacy	< - Perceived_Enjoyment	0.111
Self_Efficacy	< - Use_Intention	0.187
Reliability	< - Perceived_Usefulness	0.398
Reliability	< - Perceived_Ease_of_Use	0.124
Reliability	< - Perceived_Enjoyment	0.265
Reliability	< - Use_Intention	0.234
Perceived_Ease_of_Use	< - Perceived_Enjoyment	0.316
Perceived_Ease_of_Use	< - Use_Intention	0.497
Perceived_Enjoyment	< - Use_Intention	0.424
Perceived_Usefulness	< - Perceived_Ease_of_Use	0.364
Perceived_Usefulness	< - Perceived_Enjoyment	0.498
Perceived_Usefulness	< - Use_Intention	0.585

4.3 Evaluation of the Fitness of the Research Model



Research
Model

Chi - square/df=340.126, CMIN=1.525, RMR=0.039
GFI=.901, AGFI=.903, CFI=.947, NFI=0.904, IFI=0.948
RMSEA=.057

As a standard for goodness - of - fit, CMIN/DF, RMR, GFI, AGFI, CFI, NFI, IFI and RMES should normally be lower than 2. RMR should be less than 0.05, GFI, AGFI, CFI, NFI should be less than 0.9 and RMSEA should be less than 0.05. Of course, 0.1 to 0.05 is acceptable. Of course, the absolute baseline is not yet statistically available, but it is commonly said that these criteria are appropriate. That is, some baseline is relative according to the study.

The table above is the overall result table of route analysis. Looking at the fit, RMR=0.039, GFI=.901 AGFI=0.903. NFI=0.904, RMSEA=0.057, CFI=0.947 CMIN/DF=1.525. Overall, almost all figures exceed the standard of fitness.

4.4 Verification of Research Hypothesis and Analysis of Results

			Estimate	S. E.	β	C. R.	P	Hypothesis
Perceived_Usefulness	< -	price_sensitivity	0.006	0.069	0.007	0.092	0.927	Rejection
Perceived_Usefulness	< -	Personal_Recommendation	0.153	0.055	0.205	2.752	0.006	Adoption
Perceived_Usefulness	< -	Self_Efficacy	0.26	0.099	0.216	2.632	0.008	Adoption
Perceived_Usefulness	< -	Reliability	0.46	0.083	0.535	5.569	0	Adoption
Perceived_Ease_of_Use	< -	price_sensitivity	-0.098	0.063	-0.119	-1.554	0.12	Rejection
Perceived_Ease_of_Use	< -	Personal_Recommendation	0.069	0.049	0.098	1.408	0.159	Rejection
Perceived_Ease_of_Use	< -	Self_Efficacy	0.851	0.127	0.752	6.684	0	Adoption
Perceived_Ease_of_Use	< -	Reliability	0.118	0.062	0.146	1.901	0.057	Rejection
Perceived_Enjoyment	< -	price_sensitivity	-0.037	0.081	-0.038	-0.45	0.652	Rejection
Perceived_Enjoyment	< -	Personal_Recommendation	0.18	0.065	0.218	2.749	0.006	Adoption
Perceived_Enjoyment	< -	Self_Efficacy	0.256	0.114	0.192	2.251	0.024	Adoption
Perceived_Enjoyment	< -	Reliability	0.398	0.088	0.418	4.529	0	Adoption
Use_Intention	< -	Perceived_Usefulness	0.422	0.104	0.471	4.077	0	Adoption
Use_Intention	< -	Perceived_Ease_of_Use	0.308	0.084	0.324	3.664	0	Adoption
Use_Intention	< -	Perceived_Enjoyment	0.115	0.08	0.142	1.443	0.149	Rejection

4.4.1 Verifying the Relationship between the Characteristics of the Subscription Service and Perceived Usefulness

As a result, the sensitivity to the price of using subscription services does not appear to affect the enjoyment of subscription services perceived by subscription service users. On the other hand, the characteristics of subscription services personal recommendation, self efficacy, and reliability have been shown to have a positive impact on the enjoyment of subscription services perceived by subscription service users.

4.4.2 Verifying the Relationship Between Perceived Usefulness, Ease of Use, Enjoyment and Use Intention

As a result, the hypothesis results of this study, the same as the existing prior study, confirm that when subscribed service users find it easy to handle and useful, they lead to users' continuous use. On the other hand, it was not possible to confirm the hypothesis, which was newly attempted through this study, that the enjoyment of using the subscription service has a positive effect on the continued use intention of subscribers.

5. Conclusion

5.1 Research Summary

The comprehensive findings and implications of this study can be summarized as follows.

First, in this study, price sensitivity did not have a positive impact on both perceived usefulness, ease of use and enjoyment for subscription service users. Regardless of whether the price sensitivity is high or low, the usefulness, ease of use, and enjoyment of using the subscription service to users of the subscription service remain unchanged. Although subscription services have been in the spotlight recently, it is believed that recognition of price sensitivity may be difficult because there are no various types of services to compare the price of use.

Second, with the development of the Internet and data technology, it is possible to identify customers' increasingly diverse needs and propose services or products that meet each customer's needs. Through this study, it was confirmed that personal recommendation as a representative convenience function of subscription services has a positive effect on users of subscription services feeling useful and enjoyable. Subscription services can reduce customers' time and effort by recommending services and products suitable for each customer through surveys, details of use, etc. In particular, in the case of subscription services that provide content such as Netflix, customers enjoy greater enjoyment in using the subscription service by receiving new videos or music recommendations that suit their taste. Therefore, subscription services should strive to provide more granular and accurate personalized recommendation services.

Third, if the self efficacy that subscription users feel when using the subscription service is high, it has a significant

impact on perceived usefulness, ease of use, enjoyment on the subscription service. If self - efficacy is high, it is an important item that can increase the usefulness, ease of use, and enjoyment of subscription service. Therefore, self - efficacy should be considered important for service expansion. As a way to do that, it is necessary to pay attention to simple usage methods, efficient description, easy payment methods, and high - quality CS etc. so that customers do not feel complicated or difficult to use subscription services.

Fourth, reliability has been shown to have a significant effect on perceived usefulness and enjoyment, but not on ease of use. Reliability is very important due to the characteristic of the subscription service that customer contracts (subscribes) and pays a certain amount of money every month to receive promised products or services every month or to use them indefinitely. Therefore, these results appear to be valid. It should be noted that if the reliability of the subscription service increases, the enjoyment that subscription service users feel increases. It is essential to ensure that the reliability of the subscription service can be maintained continuously. It is important to give customers a sense of satisfaction with the promised product or service every month and trust that it will continue to be so. Subscription is not just about purchasing goods or services, but about providing continuous satisfaction and reliability.

Finally, looking at the relationship between Perceived Usefulness, Perceived Ease of Use, Perceived Enjoyment and Use Intention in this study, Perceived Usefulness and Perceived Ease of Use were shown to be significant but Perceived Enjoyment was not adopted. Perceived Usefulness and Perceived Ease of Use can be determined to be necessary factors in the user's adoption of the subscription service by directly influencing the user's intention to use the service. Therefore, subscription services need to increase users' awareness of usefulness and ease of use. It was found in this study that it is possible through increasing convenience or reliability of subscription services and self - efficacy. However, even if the pleasure of the subscription service is high, it has been confirmed that it does not directly affect the user's intention to use the subscription service. In other words, customers' intention or attitude to use subscription services does not depend solely on enjoyment. In this study, it was found that users of subscription services perceived more important for usefulness and ease of use than enjoyment through subscription services when using subscription services. Therefore, it is important to first make subscription service users aware of the usefulness and ease of using subscription services before promoting enjoyment through it.

Overall, subscription services can increase user's use intention when providing users with individual recommendation service, self - efficacy, and reliability, which can be said to be factors that significantly affect usefulness and ease of use of subscription service.

This study empirically analyzes each factor by presenting a

new research model to analyze the factors that affect the intention of using subscription services. This study has the following theoretical implications. There were few previous studies of subscription services that considered conceptual research and subscription economic characteristics, but this study was able to present new directions by applying a technology acceptance model in consideration of these characteristics. Existing research does not take into account the characteristics of the subscription economy. As a result, the same research was conducted as general online services. However, as subscription services are drawing attention as a paradigm of the new payment system, new results could be presented by attempting research considering them. In addition, this study expanded existing research and presented new directions in that it identified the relationship to the intended use through the use of extended exogenous variables and perceptual variables. At a time when users' awareness of subscription services has improved sufficiently, the results of the study are expected to be used as basic data to analyze the intentions of continuous use of actual subscribed service users.

5.2 Recommendations

A summary of the limitations and future research directions of this study is as follows.

First, this study tried to extract samples of survey respondents so that they could be evenly distributed for empirical analysis, but most of them are biased toward users in their 20s. This is because subscription economic services are a relatively recent concept and are available on the Internet, which can be used by relatively young people and unfamiliar to older people. In order to secure the generalization of the results of the study, efforts need to be made to proceed with the study considering various age group ratios. It is expected to be a meaningful study if it is analyzed as a sample of respondents of various ages for a study on the continuous use intention of subscribed service users.

Second, this study has limitations in that it focused on only the services currently being used as a representative at a time when the subscription economy market is not expanding into various fields. If the related study conducted after the subscription economy market has grown sufficiently and archived diversity, it is expected to contribute to the development of the subscription economy.

Third, because there are not many types of services that can compare the prices of subscription services, users are insensitive to price sensitivity and have no significant impact on any behavioral beliefs in this study. Subscription services will become increasingly diverse in the future. It is necessary to conduct research on how price sensitivity affects subscription user's behavioral beliefs when it is possible to compare the monthly range of different prices for the same service or prices between similar services,

Fourth, this study is based only on Korean consumers and it

is difficult to apply the results of this study globally. Therefore, it is necessary to compare and analyze users of overseas subscription services and Korean users.

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