Exploring the acceptance forsubscription-based online services

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ABSTRACT

The era of "ownership" has gone, and the era of "subscription" has come. While traditional manufacturing and service industries are struggling with the fall of earnings rates, subscription-based businesses are showing high growth rates. Although subscription-based online services (SOS) are rapidly growing in the retail market, few studies have investigated factors that affect the decision of consumers to use SOS. Therefore, this study aims to identify factors that enable predicting consumers'attitudes and intentions toward SOS and to empirically verify the factors. As a result of the study, usefulness, enjoyment, and cost advantages were shown to have positive effectson perceived value, and usefulness, technicality, and cost advantages were shown to have positive effects on attitudes. In addition, perceived value was shown to have positive effects on attitude, and perceived value and attitudes were shown to have positive effects on acceptance intentions. The fact that the strategic directivity for successful introduction and diffusion of SOS was presented by identifying the predictor variables for the acceptance of SOS through this study can be said to be the significance of this study.

☞ Keyword : Subscription-based online services, Benefit, Perceived Value, Attitude, Acceptance Intention

1. Introduction

The era of "ownership"has gone, and the era of "subscription" has come. While traditional manufacturing and service industries are struggling with the fall of earnings rates, subscription-based businesses are showing high growth rates. SOS refers to online businesses that provide customized products and services to consumers on weekly, monthly, or annual fees. SOS provide consumers with a new way to comfortably purchase and use the newest products and services by selecting products and services to fit individual customers'needs and preferences. Today, SOS successfully sell a wide range of products including art, entertainment, food / meal, pet supplies and toys [1, 2, 3].

The SOS model is a retail business strategy that enables customers to subscribe to desired services at weekly / monthly/yearly rates and purchase and use customized products and services as desired. Consumers can requestproducts and services anytime, anywhere, and companies can collect and analyze consumption data of individual consumers to understand consumer needs. [3].

Forbes (2018) diagnosed, "Subscription economy is creating a new economic life by dismantling the concept of ownership that is more than hundreds of years old, and is changing the way to consume things from ownership to membership." Forbes analyzed, "The regular delivery model is changing the purchasing habits of consumers," and added, "Start-ups are threatening large brands by making shopping, which has been bothering, comfortable."[4]. According to the Credit Suisse report, the market size of the subscribed economy is expected to be around $420 billion in 2016 and grow to $530 billion in 2020 [5].

Although the SOS model is growing rapidly in the retail market, few studies have investigated factors affecting consumers'decisions to use SOS. Moreover, the emergence of this innovative shopping method can indicate the evolution of consumer behavior, thus can warrant initial attempts to empirically understand this new phenomenon.

Existing consumer studies have not attempted to understand what drives consumers to use SOS but have identified the characteristics of customers of this new type of online consumption. Understanding basic elements that make consumers use SOS is important for the SOS industry.

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To this end, this study aims to identify factors that enable predicting consumers' attitudes and intentions toward SOS and to empirically verify the factors. To achieve the foregoing, this study uses the value-based adoption model (VAM) [6], which is well known as a model for explaining the acceptance of new technologies, as a prediction tool to understand consumers' intention to accept SOS.

By modeling the prediction elements of the VAM framework, this study can provide interesting insights into attitudes toward SOS and consumer characteristics that are highly likely to form acceptance intentions. This finding not only contributes to a theoretical understanding of the SOS phenomenon, but also helps SOS providers identify and classify consumer groups and establish customized marketing strategies.

In the next section, first, the SOS phenomenon is examined in detail and the VAM model is reviewed. In addition, possible factors that can form consumers'attitudes toward SOS are identified and defined. Based on the foregoing, before discussing the methods used to test the framework, a research framework and related hypotheses are developed. Finally, the findings of the study are presented, followed by a discussion of the results, implications, and limitations.

2. Theoretical Background and Hypotheses

2.1 Subscription-based Online Service

SOS are not a new business model. Subscription-based services for magazines, newspapers, fashion catalogs, and fresh foods (e.g., dairy products) have existed since the last century, although past subscription-based services had no online components [7, 8].

SOS refers to online businesses that provide personalized products and services to consumers on a weekly, monthly, or annual fee. Subscription service models that began with magazine subscriptions have recently been expanded into almost all product and service categories ranging from cable TV, mobile communications, newspapers, sports membership, car insurance, video or audio streaming, and

product delivery to B2B management [9, 3, 10].

Since the early 2000s, digitization has led to the resurgence of subscription models driven by pure digital products such as multimedia streaming services (e.g. Netflix). Netflix is a representative SOS model that has recently appeared, which enables those who pay a certain subscription fee per month to watch video content such as movies, dramas, documentaries, and original content provided by Netflix. In addition, Netflix provides a big data-based curation service that automatically recommends content that customers prefer by analyzing the genres or actors of the works watched by the subscribers in the past. Furthermore, Netflix continues to make aggressive investments in creating its own content based on the tastes of subscribers beyond simply being a video content platform, and through the foregoing, it has become one of the most popular Over The Top (OTT) services in the world [11].

The subscription business model as such has recently expanded into the area of real product sales service. As modern consumers' interest in in-store shopping has diminished, the SOS business has grown rapidly, generating $ 5 billion in revenue in 2014. Currently, there are about 2000 different SOS businesses in operation, and consumers can get almost all categories of products through SOS providers [7, 12, 8].

The main reason for the success of the SOS model is that it is the high lifetime value extracted from each customer compared to the existing retail model where modern consumers constantly change retailers [13]. The rapid growth of SOS is transforming consumers' online consumption culture drastically by offering shopping methods with few social interactions with others unlike traditional decision-making process models [14]. For instance, in SOS shopping, consumers don't have to necessarily go through product / trend information search, product comparison, product selection, interactions with sales staff, or even their friends who do shopping, which was the traditional form of online and in-store shopping and a traditional consumer decision-making process. Instead, the curators or stylists of SOS select the relevant items, place them in boxes, and deliver the boxes to customers'doors, and customers pay a fixed subscription fee. Subscribers may still need to perform some information retrieval and evaluation of alternatives to

choose the SOS website and subscription service they will use, but they are less passive and less committed compared to traditional shopping methods. As such, SOS reduce, minimize, or replace consumer efforts in the product selection phases of information decision making, alternative evaluation, and product decision making. Eventually, SOS relieve the consumers' "decision fatigue"resulting from the repetition of the process of searching new products and comparing different prices to make better decisions [11, 8].

In the traditional commodity economy, consumers paid to 'enterprises as much as they bought.' But as the sharing economy emerged, this formula began to shake. Consumers began to pay money to the owners as much as they used. Recently, this formula has been completely overturned. The subscription economy, in which consumers pay first and use thereafter rather than paying as much as they bought or used, is emerging.

The advent of the subscription economy shows that consumption is shifting away from the cumbersome purchasing process that must be undergone every time of purchase to immediate use. Thanks to the foregoing, enterprises can hold customers and secure stable sales. The relationship between consumers and producers is newly established.

The CreditSwitzerland report predicts that the market size of subscription services will grow to $ 550 billion by 2020 [5]. In fact, subscription services are currently receiving great positive response from consumers in various fields, and more aggressive investments are expected to be made in subscription services in the future. In addition, as more sophisticated customized services are becoming possible thanks to the development of technologies such as artificial intelligence and big data, the satisfaction of consumers who use the relevant services is also expected to increase drastically.

2.2 Value-based Adoption Model

The Technology Acceptance Model (TAM) [15] in the Informatiom System (IS) study is known as a representative theoretical model that provides useful information for explaining new information technology acceptance. The TAM describes the individual's willingness and behavior to embrace new technologies, explaining that perceived usefulness and perceived ease of use are important factors in voluntary technology acceptance and behavioral intention. Perceived usefulness here means the degree to which you believe your work performance will be improved by using the new technology, and perceived usability means that you believe that using the new technology will not require much effort [15]. However, as the information technology environment becomes complicated and various new technologies emerge, it has been pointed out that the TAM has a limit in explaining the interrelationship between various factors affecting the adoption of information technology. Various theoretical models have been proposed, such as A Theoretical Extension of the Technology Acceptance Model(ETAM) and Unified Theory of Acceptance and Use of Technology (UTAUT) [16, 17, 6].

Kim et al. [6] also proposed a value-based acceptance model (VAM), pointing out that existing TAMshave limitations in explaining new information technology acceptance by explaining acceptable behavior only with limited variations of perceived usefulness and perceived ease of use. According to Kim et al. [6], most people who use traditional technologies are employees of the organization who are obliged to accept technologies adopted by the organization primarily for business purposes, such as email and document writing software. However, with the development of the Internet and mobile technology, users such as mobile internet, mobile banking, and IPTV are changing to individuals who consume new services as well as using new technologies, and most of them voluntarily adopt technology for personal purposes. Therefore, Kim et al. [6] considered the need to look at technology usage from a consumer's perspective as well as from a technology user's perspective, and proposed perceived value as a useful variable to explain it.

Value is a constant belief that is a standard of human behavior and does not change easily and is considered as a major variable in explaining the attitudes and behaviors of consumers in academic fields such as business administration, economics, psychology and sociology [18]. Perceived value is defined as the consumer's cognitive assessmentof the trade-off between 'give' and 'get' in relation to product acquisition [19]. Therefore, Kim et al. [6]

considers the benefits and sacrifices that consumers receive from using a product or service, and as a result, evaluates the target product or service. Is the perceived value, and the user decides to act based on the perceived value. They also proposed utility and enjoyment as basic variables of benefits that determine these perceived values, and technicalities and perceived fee as basic variables of sacrifice.

2.3 Predictors of acceptance of SOS

To identify the predictors of acceptance of SOS, this study reviewed the concept models of TAM [15] and VAM [6], which are widely known as conceptual models to describe technology acceptance. Through this, we presented usefulness, enjoyment, technicality, and cost advantage as predictors of perceived value and attitude. Also, perceived values and attitudes are presented as predictors of influencing the acceptance of SOS.

Usefulness means the degree to which the user believes that the use of technology will improve the user's work and contribute to life [15, 6]. The perceived usefulness of TAM has a significant effect on the attitudes and behaviors of users on new technologies and has been identified as a variable with high explanatory power in many previous studies on technology adoption [15, 17, 6]. In VAM, usefulness has been suggested as a key variable related to benefits that affect perceived value, and empirical analysis has shown that it is a variable that positively effects on perceived value [6, 20, 21].

Enjoyment means the degree to which we believe that the use of technology will induce pleasure and interest [22, 6]. Agarwal and Karahanna [22] explained that when users perceive fun and interest in the process of using information technology, the user is immersed in using the technology and forgets the time flow. In VAM, playability has been proved to be a positive effect on perceived value by being presented as a key variable related to benefits and usefulness [6, 20].

Technical means the degree to which the use and understanding of technology is believed to be easy and uncomplicated [6]. VAM describes the technicality as the degree of physical and mental effort required by users when using new information technology [6]. In other words, if the

user perceives that the technology can be used easily and skillfully, it creates positive values and positively affects the behavior.

Cost advantage means the degree to which we believe that the economic costs associated with the use of technology will be reasonable [23, 6]. In VAM, cost has been proposed as one of the most important variables in shaping value, and if users perceive that the cost they pay to use the new technology is unreasonable and too high [6].

Avariety of prior studies (e.g., mobile Internet, IPTV, mobile government, tablet PC) on technology acceptance have shown that usefulness, enjoyment, technicality and cost advantage have a positive effect on perceived values and attitude [6, 24, 20, 21]. Therefore, the hypothesis is proposed as follows:

H1. Benefit will have a positive effect on the perceived value.

H2. Benefit will have a positive effect on attitude.

Perceived value means a consumer's cognitive assessment of the trade-off between 'give'and 'get' in relation to obtaining a new product or service [19]. Perceived values in business studies have been described primarily as subjective evaluations by consumers in selecting products or services and have been considered as one of the important variables in determining consumer attitudes and behavioral intentions [23]. These perceived values can be shaped not only in terms of economics, but also in terms of quality or characteristics of new products and have a significant impact on new technologyacceptance behaviors [6, 21, 18]. Attitude, on the other hand, means the user's positive feelings from the use of technology. Attitudes, therefore, are seen as an important factor that affects consumers' behavioral intentions with perceived values [25, 26].

A variety of prior studies (e.g., online music, social networking, online auction, e-book) on technology acceptance have shown that perceived values have a positive effect on attitudes and acceptance acceptance [27, 28, 24, 21, 18]. In addition, it was confirmed that the attitude had a positive effect on the acceptance intention. Therefore, the hypothesis is proposed as follows.

H3. Perceived value will have a positive effect on attitude.

H4. Perceived value will have a positive effect on acceptance intention.

H5. Attitude will have a positive effect on acceptance intention.

Based on the above hypotheses, study model in this study has been suggested as shown in Figure 1.
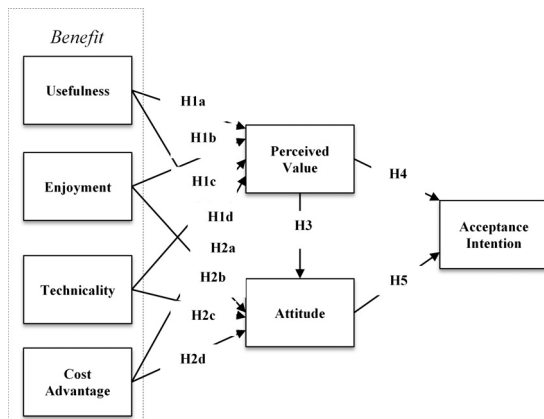
(Figure 1) Research Model

3. Research Method

3.1 Sample

In this study, data collection was collected by conducting on-site surveys of consumers living in Korea who were aware of SOS. A total of 300 data were collected to remove 15 cases with missing or unfaithful responses, and the final 285 cases were used as an effective sample for this study.

3.2 Measure

To ensure the content validity of the measurement tool, this study used the measurement items verified in the existing literature by revising and supplementing them according to the purpose of this study. First, the sub-dimensions of Benefit, which consist of usefulness, enjoyment, technicality, and cost advantage, were

(Table 1) Sample Characteristics

Category and Items		Sample Size	Ratio (%)
Gender	Male	156	58.4
	Female	111	41.6
Age	Less than 20	23	8.6
	20~29	95	35.6
	30~39	78	29.2
	40~49	46	17.2
	more than 50	25	9.4
Use period	Less than 6 month	17	6.4
	6 ~ 12 month	36	13.5
	12 ~ 18 month	45	16.9
	18 ~ 24 month	82	30.7
	more than 24 month	87	32.6

constructed into 3 items each in reference to the studies by Davis et al. [15], Dodds et al., Agarwal & Karahanna [22], Kim et al.[6], and were measured using 7-point Likert scale (Strongly disagree ~ Strongly agree). Also, Perceived value, attitude, and acceptance intention, were constructed into 4 items each in reference to the studies by Davis et al., Kim et al. [6], Yu et al. [21], Hsiao & Chen [18], and were measured using 7-point Likert scale.

3.3 Analysis method

For the analysis method and measurement tool of structural equation models, this study analyzed the results and verified the hypothesis using Amos 24.0. For the analysis of the structural equation model, the measurement model was estimated first, and then it was analyzed using the two-step approach that estimates the structural model.

4. Analysis and Results

4.1 Measurement Model

This study conducted confirmatory factor analysis to ensure the content validity of the measurement tool. As a result of confirmatory factor analysis of modified measurement model, χ^2 = 389.911 (p = .000), χ^2/df = 2.073, RMSEA = .064, IFI = .957, TLI = .947, CFI = .957, indicating that measurement model was fit. Next, for measurement items, reliability and validitytest were

conducted. For reliability, construct reliability should appear above 0.7, and average variance extract should be above 0.5. Additionally, for validity, two latent variables'AVE1 and AVE2 should bigger than squared value of its correlation. As a result of analysis, reliability and validity were verified. As described above, the verification results of the measurement model of this study are summarized and shown in Table 2.

4.2 Structural model

As measurement model's fitness, and reliability and validity of measurement items were verified, structural model analysis were conducted. As a result of structural model's fitness test, ^{2} = 410.011 (p= .000), ^{2}/df = 2.135 was above threshold 3, and RMSEA = .065 was below standard of 0.08. Moreover, IFI = .954, TLI = .944, CFI = .953 all of indices appeared above recommended value of 0.9 and therefore, the structural model'goodness of fit of the research model was verified.

(Table 2) Confirmatory factor analysis base on reliability

Measurement Item		Std. Loading	Std. Error	C.R.	Construct Reliability
Usefulness	UF1	.889			.877
	UF2	.922	.081	12.511	
	UF3	.780	.079	10.856	
Enjoyment	EJ1	.905			.870
	EJ2	.920	.099	12.703	
	EJ3	.899	.100	12.173	
Technicality	TC1	.902			.932
	TC2	.882	.039	23.572	
	TC3	.843	.038	23.901	
Cost Advantage	CA1	.812			.936
	CA2	.763	.043	22.304	
	CA3	.679	.048	21.137	
Perceived Value	PV1	.805			.927
	PV2	.739	.051	20.273	
	PV3	.667	.049	20.895	
	PV4	.726	.050	18.947	
Attitude	ATT1	.764			.921
	ATT2	.783	.059	16.493	
	ATT4	.836	.064	16.869	
Acceptance Intention	AI1	.882			.917
	AI2	.850	.052	19.322	
	AI3	.818	.057	16.674	

(Table 3) Correlations between Constructs and Validity

	1	2	3	4	5	6	7
1	.704**						
2	.370*	.692**					
3	.091*	.159*	.821**				
4	.294*	.307*	.187*	.829**			
5	.408*	.375*	.174*	.464*	.759**		
6	.389*	.244*	.284*	.379*	.493*	.794**	
7	.361*	.279*	.062*	.267*	.399*	.350*	.787**

*squared value of correlation (∅2)
**AVE(Average Variance Extract)
1 = Usefulness, 2 = Enjoyment, 3 Technicality, 4 = Cost Advantage, 5 = Perceived Value, 6 = Attitude, 7 = Acceptance Intention

4.3 Hypotheses Test

After structural model's fitness was confirmed, research hypotheses were tested. As a result, first, usefulness (C.R. = 4.133, p =. 000), enjoyment (C.R. = 2.737, p = .006) and cost advantage (C.R. = 5.902, p = .000) have a positive effect on perceived value, therefore, H1a, H1b and H1dwere supported. On the other hand, technicality C.R. = 1.576, p = .115) did not have a positive effect on perceived value, therefore, H1c was not supported. Second, usefulness (C.R. = 3.656, p =. 000), technicality (C.R. = 4.758, p = .006) and cost advantage (C.R. = 2.112, p = .035) have positive effect on attitude, therefore, H2a, H2c and H2dwere supported. On the other hand, enjoyment (C.R. = -1.149, p = .215) did not have a positive effect on attitude, therefore, H2b was not supported. Third, perceived value (C.R. = 4.240, p = .000) had positive effect on attitude, therefore, H3 was supported. Fourth, perceived value (C.R. = 5.462, p = .000) had positive effect on acceptance intention, therefore, H4 was supported. Lastly, attitude (C.R. = 3.454, p = .000) had positive effect on acceptance intention, therefore, H5 was supported.

〈Table 4〉 Hypotheses Test Results

H	Estimate ( )	C.R. (t)	Results
H1a	.438	4.133**	Supported
H1b	.265	2.737**	Supported
H1c	.073	1.576	Not Supported
H1d	.400	5.902**	Supported
H2a	.331	3.656**	Supported
H2b	-.089	-1.149	Not Supported
H2c	.179	4.758**	upported
H2d	.123	2.112*	Supported
H3	.270	4.240**	Supported
H4	.378	5.462**	Supported
H5	.314	3.454**	Supported

*: p 〈 0.05, **: p 〈 0.01, ***: p 〈 0.001

5. Conclusions

Although SOS are growing rapidly in the retail market, few studies are investigating factors that influence consumers' decision to use SOS. Therefore, this study aims to identify factors that can predict consumer attitudes and intentions about SOS and to verify them empirically.

The results of this study are as follows: First, usefulness, enjoyment, and cost advantage as a benefit dimension of accepting SOS have been shown to have a positive effect on perceived value. Therefore, it can be understood that the use of SOS enables consumers to recognize the value of services by providing daily benefits, intriguing and economic benefits.

Second, usefulness, technicality, and cost advantage have a positive effect on attitude. Similarly, the perceived usefulness, technicality and cost advantage of accepting SOS have a significant impact on the positive attitudes of consumers.

Third, perceived value has a positive effect on attitude and acceptance intention, and attitude has a positive effect on acceptance intention. Therefore, the perceived value of users when accepting SOS affects positive attitude formation and ultimately affects acceptance intention.

As reviewed above, domestic consumers'trust in subscription services is still insufficient and there is a perception that the costs paid for services are not reasonable. If this awareness is not improved, the outlook for subscription services cannot be said to be so bright.

Therefore, rather than unconditionally being immersed in the expansion of subscribers, attitudes to listen to the voices of consumers and move flexibly accordingly are necessary because the core value of subscription services is in maximizing satisfaction by delivering the most suitable products and services to individual consumers. If consumers'voices are reflected first and what are necessary to them are considered first, consumers will not begrudge the costs paid for subscription services. In addition, through the foregoing, service providers will be able to secure customers with higher loyalty who use long-term services.

Therefore, the fact that the strategic directivity for successful introduction and diffusion of SOS was presented by identifying the predictor variables for the acceptance of SOS through this study can be said to be the significance of this study.

Although this study was conducted as a study to explore the predictor variables for SOS acceptance, there are limitations against the generalization of study findings because the number of users is not since the relevant market is still at the early stage of formation. In addition, since related previous studies are extremely rare, there are difficulties in the analysis of the study findings and the drawing of implications. In the future, if diverse follow-up studies are conducted in relation to SOS, more significant findings can be expected to be drawn compared to the findings of this study.

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