

## IPTV 서비스의 지속적 사용에 대한 실증 분석 연구

김 정\* · 이동원\*\*

### An Empirical Study on Consumer's Continued Use of IPTV Service

Jing Jin\* · Dongwon Lee\*\*

#### ■ Abstract ■

Recently, IPTV attracts great attention along with the digital convergence of communication and media technologies. This study examined critical factors on the consumer's continued use of the IPTV service. Based on the expectation-confirmation theory and the innovation diffusion theory, we derived nine key factors in the research model-relative advantage, compatibility, ease of use, image, diversity of contents, interactivity, monetary value, social influence, and user satisfaction. Using the partial least square method, we found that content diversity and compatibility have a significant indirect effect on the continued use of the IPTV service via user satisfaction, and user satisfaction and social influence also have a significant direct impact on the IPTV use. These findings not only provide practical insights on the consumer acceptance of new technology-converging services, but also help managers to plan their marketing strategies better.

Keyword : Continuance Behavior, Digital Convergence, Innovation and Diffusion, IPTV Service, Post-Adoption

## 1. 서 론

In recent years, the Internet Protocol Television (IPTV) service attracts great attention along with the digital convergence of communication and media technologies. IPTV combines the advantages of TV and the Internet and dramatically changes our lifestyle. In addition, the IPTV service is capable of becoming a new business model which has huge growth potentials in technology-converging marketplaces. Since IPTV has a simple user interface with large reformation, added personalizing function, and user-operating channels, it can provide various innovative services based on communication and media technologies.

IPTV is a technology of distributing television contents over Internet protocol (IP) that enables a more customized and interactive user experience[17]. IPTV service is different from traditional, cable and satellite TV services, which use a passive one-to-many system. It has been fostering a more interactive multimedia system using streaming technologies through the network. Therefore, IPTV can provide converging services between users and service providers combining the traditional broadcasting on TV with the interactivity of the Internet. Among the many converging services, IPTV is a representative one because it is based on the convergence of network, services, and service providers[45].

According to Gartner[14], the world-wide IPTV subscribers will be total about 19.6 million in 2008, marking 64 percent increase from the 12 million recorded in 2007. In addition, the world-wide IPTV revenue is forecasted to reach \$4.5 billion in 2008, which is 93.5 percent increase compared to the year of 2007. Gartner[14] also forecasts that 1.1 percent of the world-wide households will be using the

IPTV service in 2008 and the world-wide IPTV revenue will be up to \$190 billion in 2012.

In Korea, many telecommunications firms (e.g., KT, SK Broadband) and Internet portal firms (e.g., Daum, Naver) are interested in the IPTV service, and they recognize that the IPTV market has a great potential. Due to the Korean government policy on the convergence of communication and broadcasting, service providers could conduct trial services of IPTV by the late 2008, but the IPTV service is now commercialized rapidly. With these interests on the converging technologies, many researchers have forecasted the future demand of IPTV and have investigated how customers perceive and accept the IPTV service[23, 24, 27, 43, 44]. While the user's initial acceptance is a critical first step toward realizing a success of a new, innovative technology, long-term viability of the technology and its eventual success surely depend on its continued use of the technology[4].

The deployment of converging services of TV, telephony and the Internet access over IP entails a significant initial investment for service providers. This investment is not only for the underlying network infrastructure but also for provisioning and managing vast data centers needed to provide sophisticated IPTV experience[1]. Thus, service providers need to carefully plan and manage the IPTV service deployment to maximize the return-on-investment while providing a good quality of experience to the subscribers. Therefore, to realize full potentials of the IPTV service and to improve a firm's competitive advantage in the market, IPTV service providers should know critical factors that influence the customer's intention to the continued use of the service and plan their marketing strategies in a better and suitable way.

With these observations of new technology-con-

verging environments in mind, we propose the following research questions :

- What factors influence the consumer's continued use of the IPTV service?
- How do these factors affect the consumer's intention to the continued use of the IPTV service?

To answer these questions, we organize our study as follows. In the next section, we present the theoretical background and research model with a set of hypotheses based on the innovation diffusion theory and the expectation-confirmation theory along with IPTV specific attributes and personal characteristics. Then, we present our research methodology which is based on a web-based survey and the partial least square method. The results are provided in Section 4, followed by a discussion on the findings, implications and limitations of the study in Section 5. The final section concludes our study.

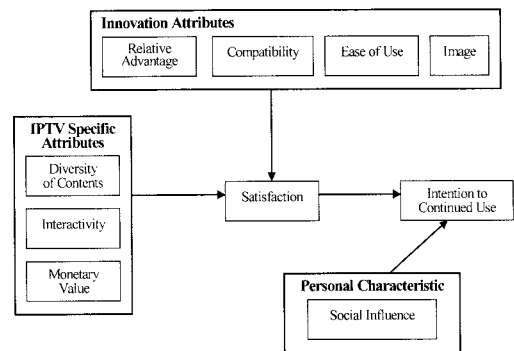
## 2. Theoretical Framework

This study examines critical factors on the continuance behaviors of IPTV service consumers. Lee et al.[28] suggest that users may evaluate their experience based on the usage stage, and then formulate their post-adoption beliefs because more and richer information is available through direct experience with technologies than through word-of-mouth or preconceived notion[25].

Expectation-confirmation theory which is derived from the consumer behavior literature has been widely used to study the consumer satisfaction, post-purchase behavior, and service marketing[37]. The theory also has been a wide

range of use in IS field to explain heterogeneous continuance behavior of the IT usage-including online banking[4], the WWW use[20], computer-based tutorial and rapid application development[5], Web portal[30], e-learning system[39], online shopping behavior[21], and mobile Internet service[49].

In this study, based on the expectation-confirmation theory[37], the innovation and diffusion theory[35, 40], IPTV specific attributes and personal characteristics, we derive nine key factors in our research model-relative advantage, compatibility, ease of use, image, diversity of contents, interactivity, monetary value, user satisfaction, and social influence. The research model is represented in [Figure 1], along with the main constructs of the theoretical framework.



[Figure 1] Research Model

### 2.1 Innovation Attributes

IPTV is a revolutionary technology, and it combines the advantages of TV and the Internet. The innovation diffusion theory has been used to study a variety of innovations in sociology[51]. Within the IS discipline, Moore and Benbasat[35] adapted the characteristics of the innovation and diffusion presented in Rogers[40] and added two specific

constructs that could be used to measure the potential adopter's perception of a technology innovation. They include relative advantage (or perceived usefulness), image, compatibility, complexity (or ease of use), trialability, visibility, and result demonstrability.

Moore and Benbasat[36] indicate that, of these seven attributes, compatibility, relative advantage and ease of use are significant in determining the continued use of personal workstations. Karahanna et al.[25] also find that the continued use intention is influenced by relative advantage and image. A number of technology adoption studies have also shown that perceived useful and ease of use have an influence on the IT usage[9, 10, 33, 47]. So in this study, we combine these results and focus on four attributes of innovations derived by Moore and Benbasat[35] to examine the continued use of the IPTV service. The definitions of these constructs are summarized in <Table 1>.

Because the subjects in this study are restricted to individual IPTV users who had experience in using the IPTV service, we expect that relative advantage, compatibility, ease of use and image will have indirect effects on the continuance intention via user satisfaction :

*H1 : Relative advantage of IPTV service will have a positive effect on user satisfaction.*

*H2 : Compatibility of IPTV service will have a positive effect on user satisfaction.*

*H3 : Ease of use of IPTV service will have a positive effect on user satisfaction.*

*H4 : Image of IPTV service will have a positive effect on user satisfaction.*

## 2.2 IPTV Specific Attributes

During the past few years, many IS researchers have examined the end user's IT adoption and usage behaviors, but IPTV has some specific attributes different from the traditional technologies.

Because IPTV is a technology-converging service for everyday life, it can provide various multimedia contents through the use of communication and media technologies to satisfy the user's different needs, such as online game, real-time multi-channel broadcasting, education programs, Internet search, Internet banking, T-commerce, messenger, video-on-demand and other interactive services.

According to numerous e-commerce studies, diverse contents or selections have been found an important factor to the Website success. So, content diversity has a positive effect on user satisfaction[3, 38, 42]. Hong[18] and Jeong[22] also found that product diversity influences the consumer's satisfaction in the Internet shopping mall

<Table 1> Innovation Attributes

Constructs	Definitions
Relative advantage	The degree to which adopting/using the IT innovation is perceived as being better than using the practice it supersedes
Compatibility	The degree to which an innovation is perceived as being consistent with the existing values, needs, and past experiences of potential adopters
Ease of use	The degree to which an innovation is perceived as being difficult to use
Image	The degree to which use of an innovation is perceived to enhance one's image or status in one's social system

context. Thus in this study, diversity of contents is expected to indirectly affect the continuance intention of IPTV usage via user satisfaction :

*H5 : Content diversity of IPTV service will have a positive effect on user satisfaction.*

IPTV also have another characteristic—interactivity. The IPTV service is different from traditional, cable and satellite TV services, which use a passive one-to-many system—it has been fostering a more interactive multimedia system using streaming technologies via the network. Therefore, IPTV could provide converging services between users and service providers combining the traditional broadcasting on TV with the interactivity of the Internet.

Interactivity has been defined in many ways. According to Deighton[11], interactivity requires two features of communication—the ability to communicate with an individual and the ability to gather and remember the individual's response. Steuer[46] considered that interactivity is “the extent to which users can participate in modifying the format and content of a mediated environment in real time.” Furthermore, Liu and Shrum[31] defined interactivity as “the degree to which two or more communication parties can act on each other, on the communication medium, and on the mes-

sages and the degree to which such influences are synchronized.” In addition, they specified three dimensions of interactivity as shown in <Table 2>.

In this study, the three dimensions of interactivity are included in one construct, and we expect that the interactivity of the IPTV service will have an indirect effect on continuance intention via user satisfaction :

*H6 : Interactivity of IPTV service will have a positive effect on user satisfaction.*

Zeithaml[53] argued that the economic value is derived from the quality that the consumer gets for the price he/she pays, and he suggested that the perception of the value depends on the frame of reference in which the consumer is making an evaluation. In the development of a decision-making process, customers compare the benefit from the service to the cost of using the service. Thus in this study, monetary value is defined as the benefits of the IPTV service compared to its financial costs.

Many marketing researchers found a significant role of the consumer's perceived monetary value in satisfaction and future decisions[7, 34]. A number of IS studies also have examined the effect of monetary value on user satisfaction and have found it to be an important determinant factor. Lim et

<Table 2> Three Dimensions of Interactivity

Dimensions	Definitions
Active control	characterized by voluntary and instrumental action that directly influences the controller's experience
Two-way communication	refers to the ability for reciprocal communication between companies and users and users and users
Synchronicity	refers to the degree to which users' input into a communication and the response they receive from the communication are simultaneous

al.[29] showed that the economic value increases the level of satisfaction in the use of mobile Internet services. Lee et al.[28] also found that the perceived monetary value have an indirect influence on continuance intention of mobile Internet users via user satisfaction.

IPTV service providers offer a huge price cut for the consumer through bundling services (e.g., TPS, QPS), which is defined as “the practice of marketing two or more products and/or services in a single package for a special price[15].” So, we expect that :

*H7 : Monetary value of IPTV service will have a positive effect on user satisfaction.*

### 2.3 Social Influence

Information can be transferred from one individual to another, and an individual also is influenced by others easily. Social network theory from the marketing literature states that informal channels of communication are the primary means of disseminating market information when the services are particularly complex and difficult to evaluate[26]. Among these informal channels of communications, word-of-mouth(WOM) referral is known to be a strong influencer of consumer behavior[6].

Social influence is driven by social factors and subjective norms. Thompson et al.[48] suggested that social factors are “the individual’s internalization of the reference group’s subjective culture, and specific interpersonal agreements that the individual has made with others, in specific social situations.” Subjective norms refer to the person’s perception that most people who are important to him think he should or should not perform the be-

havior in question[10]. Thus in this study, social influence is defined as the degree to which an individual perceives that important peers believe he or she should use the innovation[51].

Social influence that leads an individual to use a technology has been found to direct effect on adoption intention[19, 50]. Therefore, we hypothesize the following :

*H8 : Social influence will have a positive effect on continued use of IPTV service.*

### 2.4 User Satisfaction

User satisfaction is defined as a user’s post-usage evaluation of initial or ongoing experiences with a specific technology[4]. Evidence for the impact of satisfaction on behavioral intention comes from a wide variety of research in marketing and information systems, and points out that customer satisfaction has a positive influence on behavioral intention[41]. MacDonald and Levesque[34] found a significant correlation between satisfaction with technology-mediated communications and future intention. So, we hypothesized that :

*H9 : User satisfaction will have a positive effect on continued use of IPTV service.*

## 3. Research Methodology

### 3.1 Data Collection

A web-based survey was conducted to collect the data. We created a site for the Web survey, and then the consumers were requested to participate in the survey.

In the beginning of the questionnaire, respon-

〈Table 3〉 Descriptive Statistics of Respondents' Characteristics

Measure	Value	Frequency	Percentage
Gender	Male	47	74.6
	Female	16	25.4
Age	20~29	34	54.0
	30~39	19	30.2
	40~49	9	14.3
	>50	1	1.6
Average time of IPTV use(per day)	< 1 hour	35	55.6
	1~3 hour	24	38.1
	3~5 hour	4	6.3
Average time of Internet use(per day)	< 1 hour	8	12.7
	1~3 hour	37	58.7
	3~5 hour	12	19.0
	5~10 hour	3	4.8
	> 10 hour	3	4.8
Education	Technical College	1	1.6
	Undergraduate	29	46.0
	Bachelor degree	9	14.3
	Graduate student	9	14.3
	Master/Doctoral degree	15	23.8

dents were asked about IPTV usage experience and were presented with two possible answers : Yes or No. The respondents who chose "Yes" were then asked to answer a set of questions about their uses of IPTV services using a seven-point Likert scale. The range of the scale was from 'strongly disagree' to 'strongly agree.' Finally, respondents were asked about some demographic information. The sample of this study is restricted to individual IPTV consumers who experienced in using IPTV services.

The survey lasted for one month. Among the valid responses, 63 respondents have IPTV usage experience. Detailed descriptive statistics relating to the respondents' characteristics are reported in 〈Table 3〉.

### 3.2 Instrument Validity and Reliability

In this study, exploratory factor analyses were performed to check the validity of the measurement model. The initial results showed that the measurement items of relative advantage and compatibility were analyzed to a same factor, so in this study, we delete the construct-relative advantage and only use compatibility finally. 〈Table 4〉 shows the factor loadings of the measurement items. All items surpassed the recommended level for factor loading 0.50[16].

Internal consistency reliability was assessed by computing Cronbach's alpha. Hair et al.[16] suggested that the lowest limit for Cronbach's alpha be 0.70. The alpha values for each construct of this

〈Table 4〉 Factor Analysis and Reliabilities

Construct	Item	Factor loading	Composite Reliability	AVE	Cronbach's alpha
Compatibility	COM 1	0.788	0.959	0.822	0.945
	COM 2	0.853			
	COM 3	0.833			
	COM 4	0.828			
	COM 5	0.816			
Image	I1	0.900	0.947	0.782	0.929
	I2	0.861			
	I3	0.830			
	I4	0.763			
	I5	0.858			
Ease of Use	EOU1	0.879	0.980	0.925	0.974
	EOU2	0.943			
	EOU3	0.948			
	EOU4	0.967			
Diversity of Content	DOC1	0.685	0.887	0.724	0.801
	DOC2	0.662			
	DOC3	0.690			
Interactivity	INT1	0.508	0.885	0.611	0.859
	INT2	0.871			
	INT3	0.801			
	INT4	0.787			
	INT5	0.817			
Monetary Value	MV1	0.824	0.917	0.787	0.866
	MV2	0.888			
	MV3	0.803			
Social Influence	SI1	0.731	0.903	0.757	0.838
	SI2	0.805			
	SI3	0.673			
Satisfaction	SAT1	0.762	0.958	0.852	0.941
	SAT2	0.835			
	SAT3	0.804			
	SAT4	0.816			

study are also presented in <Table 4>. The values range from 0.801 to 0.974, exceeding the acceptable threshold value.

Convergent validity was also assessed by look-

ing at the composite reliability and the average variance extracted(AVE) from the measures[16]. Values of AVE for each construct all surpass the acceptable threshold value 0.50, and the composite



〈Table 5〉 Correlation of Constructs and Square Root of AVE Value

	SAT	INT	MV	DOC	SI	COM	EOU	Image
SAT	0.979							
INT	0.469	0.941						
MV	0.368	0.376	0.958					
DOC	0.65	0.464	0.337	0.942				
SI	0.535	0.317	0.376	0.489	0.950			
COM	0.564	0.288	0.266	0.474	0.443	0.939		
EOU	0.251	0.232	0.018	0.254	0.167	0.429	0.99	
Image	0.403	0.212	0.278	0.26	0.506	0.435	0.196	0.973

reliability values range from 0.885 to 0.98, exceeding the recommended value 0.7.

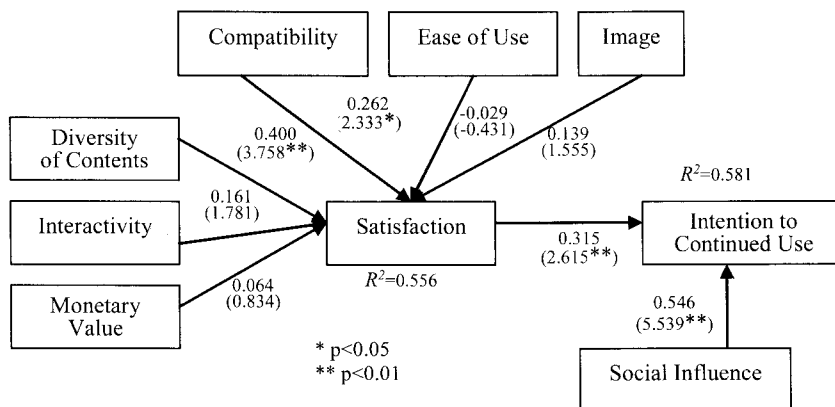
As shown in 〈Table 5〉, we checked the correlation of latent variables. The results revealed that the square root of AVE for each construct is greater than the correlations between it and all other constructs. In addition, each construct shared larger variance with its own measures than with other measures, and higher than the acceptance level 0.5 as well[13].

## 4. Empirical Results

A partial least square (PLS) method was per-

formed using Visual PLS to test the proposed model. The use of PLS in behavioral research is common because of its ability to model latent constructs under conditions of non-normality and with small to medium sample size[8]. Furthermore, PLS analyzes the structural path—the relationship among constructs for hypothesis testing[52]. [Figure 2] illustrates the research results and 〈Table 6〉 shows the summary of results.

Hypothesis testing was performed using bootstrapping to calculate  $t$ -values. As shown in 〈Table 6〉, Hypothesis 5 is supported at the level of 0.01, so diversity of contents has a positive effect on user satisfaction. Hypothesis 2 is supported at



[Figure 2] Research Results

〈Table 6〉 Summary of Results

Link	Coefficient (T-value)	Hypothesis	R <sup>2</sup>
Compatibility → Satisfaction(H2)	0.262 (2.333*)	Supported	0.556
Ease of Use → Satisfaction(H3)	-0.029 (-0.431)	Not supported	
Image → Satisfaction(H4)	0.139 (1.555)	Not supported	
Diversity of Contents → Satisfaction(H5)	0.400 (3.758**)	Supported	
Interactivity → Satisfaction(H6)	0.161 (1.781)	Not supported	
Monetary Value → Satisfaction(H7)	0.064 (0.834)	Not supported	0.581
Satisfaction → Continued Use(H9)	0.315 (2.615**)	Supported	
Social Influence → Continued Use(H8)	0.546 (5.539**)	Supported	

주) \* p < 0.05, \*\* P < 0.01.

the level of 0.05, so compatibility also has a positive impact on user satisfaction. Furthermore, Hypothesis 8 and Hypothesis 9 are supported at the level of 0.01, thus social influence and user satisfaction have a strong direct influence on continued use of the IPTV service. The effect of social influence on the intention to continued use is noticeable. User satisfaction and social influence explained 58.1% of the total variance in the continued use of the IPTV service ( $R^2 = 0.581$ ). 55.6% of the total variance in user satisfaction was explained by compatibility and content diversity ( $R^2 = 0.556$ ). In addition, the effects of ease of use (Hypothesis 3), image (Hypothesis 4), interactivity (Hypothesis 6) and monetary value (Hypothesis 7) on user satisfaction were found to be insignificant.

## 5. Discussion

### 5.1 Findings from the Results

This study examined critical factors on the post-adoption behavior of IPTV service users based on the expectation-confirmation theory, the innovation diffusion theory, IPTV specific attributes and personal characteristics. The samples in

this study were restricted to individual IPTV users who had experience in using IPTV services.

From the results of our study, we found that :

- (1) Among the three innovation attributes, only compatibility indirectly influenced continuance intention via user satisfaction, which means that the IPTV service is consistent with the existing values, needs, and lifestyle of users. On the other hand, ease of use has no significant effects, which shows the same pattern in several prior studies on the technology adoption[51].
- (2) Among the IPTV specific attributes, diversity of contents have a strong effect on continuance intention via user satisfaction, and interactivity is significant at the level of 0.1. Because IPTV is a technology-converging service from broadcasting and communications, it provides better and more contents than traditional, cable, and satellite TV services. So, the IPTV service satisfies varied need of users and makes them higher loyalty.
- (3) Finally, personal characteristics—social influence has the greatest impact on continuance intention. An individual is usually

influenced by others, and word-of-mouth (WOM) referral is known to be a strong influencer of consumer behavior[6]. This study offers evidence that social influence is a direct determinant of behavioral intention.

## 5.2 Implications

It is very interesting to know how the users adopting IPTV services feel satisfied and have an intention to use continuously. There are both theoretical and practical implications from this research.

First, in the theoretical perspective, our study developed a post-adoption model of a newly technology-converging service-IPTV and provided evidence of some critical factors affecting the post-adoption behavior. In practical point of view, the findings of our study help managers to plan their marketing strategies better. In this paper, the results reveal that diversity of contents make user's satisfaction from IPTV use higher. Thus, the technology-converging IPTV service from broadcasting and communications services provides better and more contents than traditional, cable, and satellite TV services, and then it makes the users higher loyalty. Therefore, the service provider should try to develop more contents and improve the service to use easily.

## 5.3 Limitations

The limitations of this research are as follows. First of all, the sample of respondent is a little small although the sample size is appropriate to use ten times of the number of constructs. This is because the IPTV service is in the beginning stage for diffusion. And also it hurts the generalization of the results because most of the respondents are

skewed to men, and watch the service in much shorter IPTV playing time. So in future research, it is suggested to get more samples from various groups, and evaluate the user cognition for IPTV. Finally, it is also suggested to study influent factors of initial adoption behavior for the IPTV service from non-users of IPTV, and compare the results with our findings.

## 6. Conclusion

The questions that we have in the first section are answered through the hypothesis testing. Innovation attributes—compatibility of IPTV service has a significant indirect effect on continuance intention via user satisfaction and IPTV specific attributes—content diversity of the IPTV service also indirectly affect the continuance intention of IPTV users via user satisfaction. Finally, user satisfaction and personal characteristics—social influence have a positive direct effect on continued use of the IPTV service. In particular, continued use of the IPTV service is strongly affected by social influence.

These interesting findings not only provide practical insights on the consumer acceptance of new technology-converging services, but also help managers to plan their marketing strategies better. In order to improve the value of this study, as we acknowledged our limitations, further study is needed to extend our results.

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## Appendix. Survey Items

Constructs	Items	Questions	References
Relative Advantage	RA1	IPTV enhances the quality of my recreation.	[25, 35, 40]
	RA2	IPTV enhances my effectiveness of relaxation.	
	RA3	IPTV gives me greater control over my entertainment.	
	RA4	IPTV is a more convenient way to manage my recreation time.	
	RA5	Overall, I believe that IPTV has relative advantages.	
Ease of Use	EOU1	Learning to operate IPTV is easy for me.	[25, 35, 40]
	EOU2	Instructions for using IPTV are easy to follow.	
	EOU3	It does not take too long to learn how to use IPTV.	
	EOU4	Overall, I believe that IPTV is easy to use.	
Compatibility	COM1	Using IPTV fits into my entertainment.	[25, 35, 40]
	COM2	Using IPTV fits into my recreation.	
	COM3	Using IPTV fits into my lifestyle.	
	COM4	Using IPTV fits into my relaxation.	
	COM5	Overall, I believe that using IPTV fits into all my aspects.	
Image	IM1	The use of IPTV would create a favorable perception of me.	[25, 35, 40]
	IM2	The use of IPTV would enhance my value among other people.	
	IM3	Those who use IPTV would have a good image.	
	IM4	Those who use IPTV would generally have a good social status.	
	IM5	Overall, the use of IPTV would create a positive image.	
Interactivity	INT1	I could get the content information quickly through IPTV.	[11, 31, 46]
	INT2	I could provide my suggestion on the content in real time through IPTV.	
	INT3	I could share diverse contents(e.g., UCC) in real time with peers.	
	INT4	IPTV has a number of contents which can be selective and with real time discussions.	
	INT5	IPTV provides a virtual environment which users interact with.	
Content Diversity	DIV1	IPTV has a variety contents with diverse areas of interests.	[3, 12, 38, 42]
	DIV2	IPTV provides a number of good quality contents.	
	DIV3	IPTV provides diverse contents which cannot be provided by other broadcasting channels.	
Monetary Value	MV1	I feel that IPTV service fees are inexpensive if the service is bundled with different services(e.g., TPS and QPS).	[28, 29, 53]
	MV2	I feel that I saved money if the IPTV service is bundled with different services(e.g., TPS and QPS).	
	MV3	Overall, I feel attractive on the IPTV service due to the monetary value caused by the bundled service.	
Social Influence	SI1	My peer groups would think that using IPTV is a good idea.	[2, 19, 50]
	SI2	My peer groups recommend continued use of IPTV.	
	SI3	I tend to follow the suggestion or advice from my peers.	
User Satisfaction	SAT1	I am satisfied with the content diversity provided by IPTV.	[34, 41]
	SAT2	I am satisfied with the content quality provided by IPTV.	
	SAT3	IPTV provides the services and benefits which I expected.	
	SAT4	Overall, I am satisfied with using IPTV.	
Continued Use	CU1	I will continue to use IPTV.	[49, 51]
	CU2	I will use IPTV frequently in the future.	
	CU3	I will use IPTV continuously in the future.	

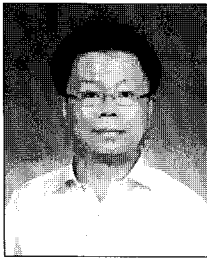


## ◆ 저 자 소 개 ◆



**김 정** (kimjung82@korea.ac.kr)

고려대학교 경영대학원에서 MIS 석사학위를 취득하였고, 현재 중국에서 IT 관련회사에 근무하고 있다.



**이 동 원** (mislee@korea.ac.kr)

현재 고려대학교 경영대학 교수로 재직 중이다. 서울대학교에서 경영학사 및 경영학 석사, University of Arizona에서 MIS 석사, University of Minnesota에서 경영학 박사를 취득하였다. 주요 관심연구분야는 전자 상거래 가격 전략, 온라인 소비자 행동 분석, 정보시스템 투자 및 활용, 지식 공유 및 관리 등이다. Journal of Management Information Systems, International Journal of Electronic Commerce, Communications of the AIS, Information Systems Frontier, Electronic Markets, Journal of Global Information Technology Management, ACM Crossroads 등을 비롯한 다수의 국내외 학술지에 논문을 발표하였다.