

Customer acceptance of IPTV service quality

Hyeong Yu Jang^a, Mi Jin Noh^{b,*}

^a School of Business Administration, Gyeongsang National University, 600 Gaja Dong, Jinju 660-701, South Korea

^b School of Business Administration, Kyungpook National University, 1370 Sankykdong, Bookgu, Daegu 702-701, South Korea

ARTICLE INFO

Article history:

Available online 20 April 2011

Keywords:

IPTV service quality
Design
Security
Customer service
Enjoyment
TAM

ABSTRACT

The purpose of this article is to provide insights into the effects of Internet Protocol Television (IPTV) service quality and reveal mediation effects in the process of forming the repurchase intention. This study incorporates additional theoretical construct, perceived enjoyment, to reflect IPTV characteristics using extended technology acceptance model (TAM). This study empirically investigated a research model and conducted a survey of IPTV service users. The results of this study are as follows. First, IPTV service quality is summarized as design, security, and customer service, which is supported by second-order factor analysis. Service quality had an influence on perceived usefulness, perceived ease of use, and perceived enjoyment. Second, perceived ease of use had a significant effect on perceived enjoyment, and perceived usefulness also had an effect on repurchase intention. Third, attitude, trust, and satisfaction had a positive effect on repurchase intention. To reveal the impact on repurchase intention of the IPTV service quality, this study proposes customer acceptance on IPTV service based on a modified TAM.

© 2011 Elsevier Ltd. All rights reserved.

1. Introduction

According to an IPTV Global Forecast published by MRG (2009), global IPTV subscribers will grow from 28 million in 2009 to 83 million in 2013, a compound annual growth rate of 31%. After a slow start, IPTV is starting to gain traction worldwide as the breadth and depth of deployment increases. South Korea is one of the most advanced broadband markets and is a worldwide leader in availability and subscriber's levels for high-speed broadband infrastructure. After the launch of IPTV at the beginning of 2008, the number of KT, SK Broadband and LG Telecom subscribers has topped 1.5 million (Korea IT Times, 2009). However, this estimation should be noted as being worse than the expected performance as the number of IPTV subscribers fell far short of the initial target range of 2.5–3 million. IPTV marketers have been urged to come up with active marketing strategies, with the aim of boosting the number of IPTV subscribers. Despite the growing market traction, the competitive atmosphere is also getting tenser as many companies try to get a slice of the market pie.

All the competing companies are considering the next strategy that should be used to retain their market share. However, it is not easy to build a pin-pointed strategy in the Korean market because IPTV service is currently facing stiff competition from cable TV which has already reached 15.2 million subscribers and

has been offering more content at a cheaper price. The priority of this study is to examine the steps concerned with acquiring and retaining users. In the context that the IPTV service environment has been undergoing a dramatic change along with the IPTV market growth and customer's demanding requirements, it is necessary to improve IPTV service quality and relationship quality (Lim, Kim, & Yoo, 2008). These changes need to maximize the positive customer attitude and the IPTV experience, and to satisfy the general consumers who expect IPTV to match or exceed the quality of traditional television and cable broadcasting.

Many studies have been published on the impact of service quality in the penetration of a new product market like the IPTV. Early studies were based on service marketing (Fisk, Brown, & Bitner, 1993), whereas more recent studies base their validation on service quality, system quality, and information quality (Pitt, Watson, & Kavan, 1995; Shin, 2009b). This paper will discuss three critical service qualities (design, security, and customer service) in the Korean IPTV market. In addition to the importance of quality management in introducing new IT products, an IPTV, a convergent technology between information and media technology is very close to information technology. As such, repurchase intention in IPTV should be explained in part by the TAM (Davis, 1989; Davis, Bagozzi, & Warshaw, 1989). However, the original TAM model suggested by Davis (1989) cannot fully explain the field of IPTV, because IPTV users will expect to get entertainment at the same time. In this context, to further improve TAM predictions on repurchase, several authors have proposed TAM extensions with constructs such as perceived enjoyment (Childers, Carr, Peck, & Carson, 2001; Monsuwe, Dellart, & de Ruyter, 2004).

* Corresponding author. Tel.: +82 10 62060972; fax: +82 53 9506247.

E-mail addresses: jmgt21@gnu.ac.kr (H.Y. Jang), mynono@daum.net (M.J. Noh).

However, in the meantime, the extreme growth and potential within IPTV have attracted many companies recently, and the fragmentation of the market has made it very difficult to reach economies of scale. In such a situation, acquiring user satisfaction and trust is inevitable. Unless an attractive IPTV service and content assuring customer satisfaction and trust are created, it is almost impossible for the providers to increase their market share enough to sustain a competitive advantage. Therefore, another objective of this paper is to analyze the reuse intention process by capturing the meaning of the relationship quality including satisfaction and trust that are keys to reinforce the IPTV business and the related market. Generally, a high level of relationship quality consisting of trust (Morgan & Hunt, 1994) and satisfaction (Zeithaml, Berry, & Parasuraman, 1996) results in accordingly high levels of repurchase intention (Reichheld, 1993). This study will also provide insights into the effects of IPTV service quality on TAM and extended TAM, while revealing the formation process of repurchasing intention after the positive attitude of an IPTV service.

There is a significant difference between this study and existing studies considering IPTV adoption. First, previous researches relevant to the IPTV were conducted in surveys targeting potential customers who intended on using mobile TV, television commerce, and cable TV (Jung, Perez-Mira, & Wiley-Patton, 2009; Shin, 2007, 2009b; Yu, Zheng, Zhao, & Zheng, 2006), but this study will conduct a survey that targeted experienced IPTV users which allowed for obtaining of sample representativeness and make generalizations. Second, IPTV service quality was specifically analyzed by the secondary factor analysis for extracting the crucial quality factors including design, security, and customer service. Third, unlike many papers that examined the user adoption factors in IPTV service, this study focus on the formation processes of repurchase intention using an extended TAM that illuminated the integrative perception between information technology and marketing. Fourth, to overcome the narrow approach in IPTV adoption, this study incorporates a comprehensive adoption process considering quality, TAM variables, and extended TAM variables. In sum, this study is distinct from the others because of its interdisciplinary approach between management information system and marketing.

2. Literature review

2.1. IPTV service

An IPTV is defined as a digital television service delivered to subscribers using a broadband Internet connection. The conditions required for the IPTV are the spread of broadband and the construction of the infrastructure for convergence environment (Kim & Sugaya, 2006). The term IPTV usually includes not only a broad range of programs or TV channels provided by one or multiple service providers, but also some specialized programming like concerts, special events and movies, provided only when requested by the users. The combination of ubiquitous broadband access, consumer familiarity with the Internet, and the competitive dynamics of the provider all point to a rapidly developing market. Gaining an early foothold in such a market that is set for exponential growth will help ensure continued success as this multi-billion dollar market develops. The IPTV global market is creating significant opportunities for service providers, equipment OEMs and silicon suppliers. Within three years related equipment and software sales will exceed \$15 billion, while service revenues will exceed \$59 billion (Lee, 2009).

In South Korea, fixed operators such as SK Broad Band, LG Telecom, and KTF take the lead in IPTV service market, but due to their unprepared institutional frameworks and controversy over fair regulations between cable TV operators and IPTV service providers, the

market extension in this service has been delayed. The success of the IPTV service in Korea is heavily dependent upon how fast service providers can roll out reliable IPTV services that give consumers the most convenience and flexibility before competing providers do the same thing. IPTV service providers around the world are endeavoring to expand their service offerings, along with integrated data, voice, and mobility services, to counter declining traditional voice revenues and compete with other types of providers (Cisco White Paper, 2007).

Several factors during initial service introduction will heavily influence customer perception and thereby enable longer term success based on the above context. Some examples of these services are IPTV service quality, IPTV adoption process resulting in the positive attitude and repurchase intention, and relationship quality strengthening repurchase intention. This paper will explore these factors and the progress of repurchase intention in IPTV service adoption, to finally reveal the possible effects that focused factors bring to IPTV industries.

2.2. Quality components in IPTV service

Introducing new services based on new technology is a complex and challenging task for most companies. In the process of launching a new product or service, one of crucial tasks is to ensure and improve the quality of services not only meeting user expectations but also fulfilling the demands of competitive pressure. There is no commonly accepted set of service quality in IPTV at a level of detail that supports customer needs and wants, although the IPTV quality experienced by subscribers must be equal to or better than conventional cable and satellite TV services. Service providers will run the risk of significant subscriber defection in cases of continuously overlooking this negligence. User quality expectations in IPTV are elevated because of experiences with existing reliable television services from cable and satellite providers. IPTV service providers must not only roll out IPTV services that meet user expectations but their offerings need to be compelling enough to lure customers away from other providers.

Some studies have been published on modeling the impact service quality in IPTV has on customer attitudes (Shin, 2009a, 2009b) and others focused on the antecedents and outcomes of the users (Ha & Stoel, 2009; Lin & Lu, 2000; Pitt et al., 1995). Design quality, security level, and customer oriented service mean everything to IPTV subscribers, who have very high expectations and very low tolerance for anything less than the same quality of experience they have received from their traditional television services (Brix White paper, 2006).

Based on the literature review, there are three critical components to gain access into markets in IT product and service: design, security, and customer service. First, design is a key element of an IPTV service assurance (Best, 2006; Rebert, 2006). An effective IPTV service design allows customers to identify the highest service quality and assures it is provided. Second, due to the technical requirements of IPTV, security robustness is needed to ensure the quality, reliability, and availability of IPTV services (Bilgehan & Matthews, 2008). Third, customer service concerned with experience quality is vital to the success of IPTV service (Kerpez, Waring, Lapiotis, Lyles, & Vaidyanathan, 2006). Without service assurance providing customer service visibility, providers do not have the necessary insight to proactively ensure that customers' expectations are being met. While there are numerous factors that determine how the user experiences product and service, this research mainly focus on the above qualities because they can find the solutions from the behavior pattern of IPTV service. For example, because IPTV subscribers are provided with a broad array of digital services, including hundreds of video, high-definition music channels, VOD, interactivity, high-speed Internet,

and telephone service all in a spectrum-efficient manner, operating and maintaining of a IPTV service requires a new perspective and the skills to stand out as a customized IPTV design and service.

2.3. IPTV service quality as an external variable of TAM

Delone and McLean's IS (D&M IS) success factors (1992) have been received by various conventional studies, which were included its system aspect without the human interaction aspect (Li, 2007). This shortage can be overcome by the addition of the service quality.

Although service quality was firstly defined by Parasuraman, Zeithaml, and Berry (1985) in the marketing area, Pitt et al. (1995) suggested that SERVQUAL was an appropriate instrument for measuring the IS service quality, while intending that it should be tested in IS contexts. Delone and McLean (2003) investigated an updated D&M IS success model that included service quality, which was tested by the 22-items SERVQUAL instrument from marketing to an IS context. To better understand the success method for IPTV service, it is required to examine what is happening on the side of each party involved in service quality and IS context.

IPTV service quality is dependent on the customers' subjective assessments, and is created through interaction with human service providers. These two key variables in D&M IS success model cannot explain customers' behavior toward IPTV services, so IS application service such as IPTV needs to contain customer's behavior factor such as service quality. If customers recognize a high level of customer service, they shall have high expectations to the benefits of future IS services. This expectation might be measured by an instrument such as Davis's (1989) perceived usefulness and perceived ease of use.

Seddon (1997) tested a modified version of Delone and McLean (1992) with system quality, information quality, perceived usefulness, and so on. Cao, Zhang, and Seydel (2005) identified what constitutes web site quality, and examined factors that captured web site quality using an IS success model. They estimated web site quality based on TAM with customers' beliefs (perceived usefulness and ease of use). Ha and Stoel (2009) studied the relationship between e-shopping quality and ease of use and enjoyment. In specific, several researches have indicated that quality attribute including specific technology factor positively influences perceived usefulness (Lin & Lu, 2000; Shin, 2009a, 2009b). Sandra Weniger (2010) extends prior research by proposing a research model for studying the driving forces of users' adoption of IPTV, stressing the importance of the perceived qualities including the Lederer, Maupin, Sena, and Zhuang (2000)'s IPTV-specific quality factors (content, system security, and interactivity). This research also incorporates and tests a direct link between perceived qualities and TAM variables (perceived usefulness and perceived enjoyment).

In this study, we investigated how customers perceive IPTV services. Based on the above articles, we measured the connections between service quality, which can reflect customers' subjective assessment of IPTV services, and customers' beliefs, which can explain customers' behavior in extended TAM.

2.4. TAM in IPTV service

IPTV is a system where a digital television service is delivered using Internet Protocol over a network infrastructure, which may include delivery by a broadband connection. It is, in essence, a convergent technology between information and media technology that is very close to information technology. Therefore, IPTV adoption or purchase intention should be explained in part by the TAM (Davis, 1989; Davis et al., 1989).

TAM is a useful theory of technology acceptance and theorizes that the effects of external variables on user intention are medi-

ated by perceived usefulness and perceived ease of use (Venkatesh & Morris, 2000). Numerous empirical tests have shown that TAM is a parsimonious and robust model of technology acceptance behaviors in a wide variety of IT (Gefen, Karahanna, & Straub, 2003; Taylor & Todd, 1995).

This study extends the original TAM to identify the factors that influence user intention to watch IPTV in South Korea. In the original TAM, which was applied in a variety of studies in IT usage and used to predict the attitude and buying, two basic constituents, perceived usefulness and perceived ease of use, affected attitude, which in turn influenced intention. Therefore, purchase and repurchase intentions are affected by a user's intention. Although the two factors in TAM were believed to be more parsimonious and robust, these were not enough to explain consumers' IPTV adoptions because the basic TAM theory lacked comprehensive approaches to both technological and broadcasting aspects to reflect media characteristics such as enjoyment and delight. Along this line, Shin (2009b) explored the factors influencing the adoption of IPTV, and tested the applicability of the TAM in a new convergent technology. A modified TAM for IPTV proposed that new constructs determine user-perceived usefulness and enjoyment of using IPTV, which showed that the perceived qualities of the content and system were found to have a significant effect on users' perceived usefulness and perceived enjoyment.

This study examined the perceived enjoyment of IPTV and added it to a pre existing framework, which is widely accepted as a theoretical framework to study online media adoption (Davis, Bagozzi, & Warshaw, 1992; Guangying & Dominique, 2009). User pleasure is one of the important reasons for IPTV purchase intention. This aspect motivates the user to purposefully select and subscribe in order to satisfy a set of psychological needs and wants behind those motives. IPTV marketers must offer a comprehensive broadcast channel lineup along with an extensive VOD library of blockbuster films, Hollywood classics, and specialized content to maximize enjoyment through seemingly unlimited multimedia (Secure media, 2008). At the heart of an IPTV service is interactive programming, which is designed to maximize a user's enjoyment. Thus, the determinants influencing IPTV adoption and repurchase intention were analyzed using a basic TAM and an extended TAM that included perceived enjoyment in this study.

2.5. Formation of repurchase intention

While there is a broad consensus that certain buyer attitudes, satisfaction, and trust are associated with the repurchase of professional services, comparatively little attention has been devoted to identifying the behaviors associated with such a repurchase. The factors influencing repurchase intention in IPTV service were studied in this paper. In normal commercial transactions, the value from the loyal customers is far greater than disloyal ones. Therefore, it is very important to make a first time visitor become a regular customer so that customers could purchase regularly. This research particularly focuses on the antecedents of customer's repurchase intention which consists of attitude, satisfaction, and trust.

2.5.1. Attitude and repurchase intention

Adoption of new product and service is often associated with positive attitude toward the offering package and satisfaction and trust. Attitude is presumed to mediate effects of beliefs attributes of a service, and thus, have effects on intention to use or reuse a service. These relationships have been studied in the theory of TAM (Davis et al., 1989) and the theory of planned behavior (Ajzen, 1991).

The theory of planned behavior postulates that intentions are a function of three factors including attitudes toward the behavior which refer to beliefs about the outcomes associated with per-

forming a particular behavior. It also provides a model for behavior modification in addition to prediction. Assessing people's attitudes which underpin their intention to perform a given behavior, can reveal information that may be applied to create communication strategies to alter these elements and thereby intention and behavior (Ajzen, 1991).

According to TAM, perceived use and perceived ease of use are the primary drivers of a customer's attitude. In the majority of research involving TAM, the attitude variable is excluded. However, TAM will not suffice as a model if the attitude variable is excluded, especially in a mandatory usage environment like the IPTV service (Brown, Massey, Montoya-Weiss, & Burkkman, 2002). Attitude is the predisposition to respond favorably or unfavorably to a stimulus (Zhengchuan, Chenghong, & Hong, 2008). Moreover, several researchers have found attitude to be major antecedents of customer repurchase intention (Roest & Pieters, 1997). Hellier, Geursen, Rodney, and Rickard (2003) states that general customer attitude have priority repurchase intention. A high relative attitude expressed by customer *loyalty* that leads to repeat buying (Dick & Basu, 1994).

2.5.2. The relationship between quality and repurchase intention

Repurchase intention means the status of consumers' desire to purchase a product or service again. Repurchase intention of customers is an indispensable factor for successful operation of most businesses. The value provided by steady and loyal customers has a direct influence on the success of a company, and it is largely determined by customers' repurchase intention (Chung and Lee, 2003). The emergence of the relationship-marketing in marketing concept consolidates the increasing importance given by marketing academics to managing, developing, and evaluating relationships to ensure continuous purchasing from a customer (Sheth & Parvatiyar, 1995).

The topic of relationship quality has stimulated a profuse production of scientific publications within this paradigm. One of the basic models to explain purchase intention and/or behavior is the relationship quality model (RQ). High levels of relationship quality result in accordingly high levels of purchase or repurchase intention. RQ is frequently called a satisfaction-profit chain and is the most commonly used paradigm to predict customer behavior in customer-firm relationship contexts. It starts with service or product satisfaction, over with relationship satisfaction including satisfaction and trust (Reichheld, 1993). Loyalty built up of attitudinal loyalty including trust and satisfaction, which leads to repeat patronage intentions (Dick & Basu, 1994). Past researches have primarily focused on trust (Doney & Cannon, 1997; Morgan & Hunt, 1994) and satisfaction (Fullerton & Taylor, 2002; Homburg & Giering, 2001) as predictors of purchase or repurchase intentions. De Cannière et al. (2009) revealed that RQ is a proper predictor of behavioral intention using real-life purchase behavior data of apparel sales and survey information.

Customer satisfaction with company's products or services is often seen as the key to a company's success and long-term competitiveness. In the context of relationship marketing, customer satisfaction is often viewed as a central determinant of customer retention and repurchase. Consumer satisfaction with products or services has been shown to influence their behavioral intention, and is measured as loyalty toward the product or service (Yi, 1990) and repurchase intention (Yi & La, 2004). Thus, consumer satisfaction with a digital service should be considered a significant predictor of their intention to use it in the future. Chung and Lee (2003) studied the effect of 15 variables on the consumers' overall satisfaction and repurchase intention in Internet shopping malls. This research revealed that product perceptions, customer service, perceived ease of use, site image, promotion, and communications environments are positively related with the repurchase intention.

Also, the overall satisfaction level of customers for the Internet shopping malls positively influences repurchase intention.

In the same line with satisfaction, trust is also believed to promote commitment in various ways entailing higher rates of repurchase intention. On-line customers generally stay away from electronic vendors whom they do not trust (Reichheld & Scheffer, 2000). Trust implies that the consumer feels more secure and is willing to depend, or intends to depend, on the trustee. Thus, trusting intentions, in m-commerce, include making a one time or repeat purchase, or acting on information provided by an m-vendor (McKnight, Choudhury, & Kacmar, 2002). Trust is crucial to relationship efficiency which in turn fosters the cognitive commitment of the customer to the relationship. High levels of trust entail higher rates of acquiring and retaining customers (Thorsten & Alexander, 1997).

Thorsten and Rost (2003) proposed and tested a structural model of customer retention to measure the effects of trust and involvement on customer retention assuming general customer satisfaction. As a result, customer satisfaction was not a construct on its own but was combined with retention. Trust serves as a strong trigger for enhancing customer retention. Gefen et al. (2003) suggested that there be some separation between trust and actual behavioral intentions like repeat purchase intentions in the ongoing economic relationship of customers and electronic vendors.

3. Research model and hypotheses

3.1. Research model

Davis (1989) suggested TAM as the model for predicting and explaining user behavior and IT usage (Gefen et al., 2003; Taylor & Todd, 1995) without including trust and satisfaction to improve individuals' intention. Recently, many researches proposed the extended TAM considering this limitation.

Shim, Lee, and Kim (2008) showed the relationship between satisfaction and intention based on the extended TAM. When the customers used IPTV services, they experienced IPTV services such as the information search, navigation, payment and so on, all of which made the quality of the IPTV services very important in their perspective. Many studies relating to online shopping and Internet commerce have considered the quality of web sites (Wolfinbarger & Gilly, 2003). Therefore, we have proposed a research model based on the results of a preceding literature review (see Fig. 1).

We divided the IPTV service quality into secondary concepts (design, security, and customer services) and studied whether IPTV service quality has a positive effect on TAM variables and repurchase intention in order to investigate the behavior of IPTV service users. This study also examined whether customer trust and satisfaction with IPTV services have an effect on the repurchase intention.

3.2. Research hypotheses

Davis (1989) described a set of external variables that influence perceived ease of use and perceived usefulness. Recent studies added various constructs into TAM, and service quality is used as an antecedent for perceived usefulness, perceived ease of use, and perceived enjoyment (Kim & Han, 2009).

Shih (2004) used three constructs such as information quality, systems quality, and service quality for users' assessment for online shopping. Service quality is the most researched area of services marketing and information technology (Liao & Tsou, 2009; Lin & Lu, 2000). From the customers' perspective, service quality refers to a number of factors regarding their experience including web site navigation, customer interactions, and payment system.

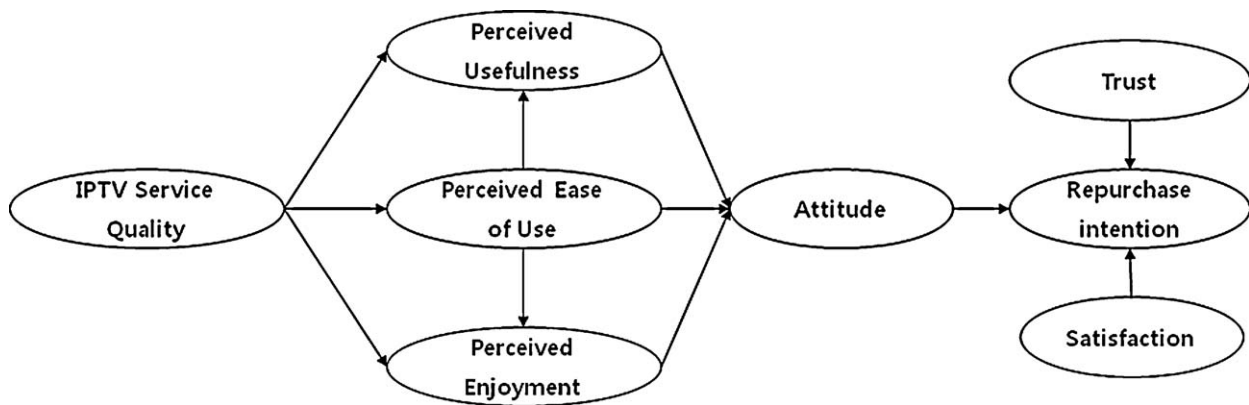


Fig. 1. Research model.

Ha and Stoel (2009) examined the relationship among quality, ease of use, usefulness, and enjoyment based on TAM. Shin (2009b) proposed a modified TAM as a conceptual framework and SEM for analysis, and examined quality as a factor influencing the adoption of IPTV.

Lin and Lu (2000) presented quality factors as preceding variables of beliefs such as perceived usefulness and perceived ease of use based on TAM. Sanchez-Franco (2010) proposed perceived affective quality which is an attractive field of study in information system, and studied interaction effects of perceived affective quality on extending TAM. These studies showed a positive relationship between service quality and belief variables such as perceived usefulness and perceived ease of use. Hence, this study describes IPTV service while considering perceived usefulness, perceived ease of use, and perceived enjoyment.

H1. IPTV service quality will have a positive direct effect on perceived usefulness.

H2. IPTV service quality will have a positive direct effect on perceived ease of use.

H3. IPTV service quality will have a positive direct effect on perceived enjoyment.

Previous research on TAM proposed to measure the user acceptance considering belief variables such as perceived usefulness and perceived ease of use, and these belief variables have a positive effect on attitude (Davis et al., 1989). These variables are able to explain a user's adoption of information technology such as IPTV, Internet, and mobile systems. Especially, the information technology such as IPTV considers the perceived enjoyment (Kim, Kim, & Shin, 2009b; Shin, 2009a).

Chau and Vincent (2003) measured users' acceptance of Internet banking based on TAM, and empirically proved the relationship among perceived usefulness, perceived ease of use, and attitude. Likewise, Shin (2009b) proposed a conceptual framework using a modified TAM, and found that the perceived enjoyment has a significant effect on the customer attitude. Kim, Choi, and Han (2009a) and Kim et al. (2009b) described the perceived usefulness, perceived ease of use, and perceived enjoyment using extended TAM, and confirmed the hypothesis by predicting customers' intention to reuse an airlines B2C e-commerce website.

Ha and Stoel (2009) studied the extended TAM, integrated e-shopping quality, ease of use, usefulness, enjoyment, attitude, and intention into TAM to understand consumer acceptance of e-shopping. This paper therefore presents the relationship among perceived usefulness, perceived ease of use, perceived enjoyment, attitude, and repurchase intention, and proposes the following hypotheses:

H4. Perceived ease of use will have a positive direct effect on perceived usefulness.

H5. Perceived ease of use will have a positive direct effect on perceived enjoyment.

H6. Perceived usefulness will have a positive direct effect on attitude.

H7. Perceived ease of use will have a positive direct effect on attitude.

H8. Perceived enjoyment will have a positive direct effect on attitude.

H9. Attitude will have a positive direct effect on repurchase intention.

The existing TAM includes belief variables such as perceived usefulness and perceived ease of use, and shows that these belief variables have a positive effect on the attitude (Davis et al., 1989). The extended TAM can explain why customers use technologies such as IPTV, Internet, and so on. Specially, new technologies like IPTV can be explained through trust and satisfaction by the extended TAM (Kim et al., 2009a, 2009b; Shin, 2009a). In addition, various fields, including sociology, social psychology, and organizational behavior, have different methods for explaining how trust can predict a customer's behavior (Gefen et al., 2003).

Kim et al. (2009a, 2009b) used this to assess the causal determinants of customers' acceptance of airline B2C e-commerce websites regarding trust. Ha and Stoel (2009) included trust, ease of use, enjoyment, and usefulness into TAM to understand consumer acceptance of e-shopping. Ong, Lai, and Wang (2004) proposed adding perceived trust, perceived usefulness, and perceived ease of use of TAM to explain the acceptance of e-learning. The satisfaction and trust are overall assessment and sense about new information systems such as IPTV. Diverse studies of reuse intention consider the satisfaction and trust (Shim et al., 2008). Based on the review of trust and satisfaction with an extended TAM, the following hypotheses have been proposed.

H10. Trust will have a positive direct effect on repurchase intention.

H11. Satisfaction will have a positive direct effect on repurchase intention.

4. Research method

4.1. Sample and procedure

The target population of this study was IPTV service users in Korea, and a pilot test validated the survey instrument design using

Table 1
Demographics profile of respondents.

Variable	Frequency	Percentage
Gender		
Male	128	65.6
Female	67	34.4
Income (million won/month)		
Less than 2	34	17.4
2–3	58	29.7
3–4	55	28.2
4–5	27	13.8
5–6	10	5.1
Over 6	11	5.6
Main broadcast		
Mega TV	53	27.2
SK Broadband	36	18.5
Hana TV	40	20.5
Cable TV	50	25.6
Others	16	8.2
Motive for watching IPTV		
Children's education	22	11.3
Good picture quality	11	5.6
Low cost	9	4.6
Various channels and content	97	49.7
Ease of watching	28	14.4
Interaction	18	9.2
Others	10	5.1

30 IPTV service subscribers in Korea. The data was gathered from 195 questionnaire respondents who experiencing watching IPTV. The demographic profile of respondents is shown in Table 1. Of the 195 respondents, 128 (65.6%) were males and 67 (34.4%) were females. The average income of 29.7% of the users was ₩2 between 2 million won and 3 million won a month, and 28.2% were ₩2 between 3 million won and 4 million won a month. In terms of a main broadcast, 27.2% of the respondents watched Mega TV, and 25.6% watched cable TV. In terms of the users' motivation for watching IPTV, 49.7% of the respondents reported their primary motivations as "various channels and content," and 14.4% reported "ease of watching IPTV" as their primary motive. Table 1 shows the demographic profile of the respondents.

4.2. Measurement development

To validate measurement model of this study, we undertook validity assessments including content, discriminant, and convergent validity. Content validity of our survey was established from the existing literature, and all measures were constructed by adopting constructs validated by other researchers. Discriminant validity of our instrument was assessed by examining the correlations among questions (Fornell & Larcker, 1981). Table 2 displays the correlation matrix, and these correlations indicate that multicollinearity was not a serious problem in the proposed model. Convergent validity was assessed by examining the composite reliability of measures and the variance extracted by measures (Fornell

Table 2
Correlation matrix.

Construct	IPTV quality	Perceived usefulness	Perceived ease of use	Perceived enjoyment	Attitude	Trust	Satisfaction	Repurchase intention
IPTV quality	1.000							
Perceived usefulness	0.365**	1.000						
Perceived ease of use	0.251**	0.218**	1.000					
Perceived enjoyment	0.412**	0.437**	0.355**	1.000				
Attitude	0.588**	0.363**	0.140**	0.361**	1.000			
Trust	0.487**	0.416**	0.315**	0.513**	0.417**	1.000		
Satisfaction	0.398**	0.362**	0.183**	0.395**	0.331**	0.441**	1.000	
Repurchase intention	0.420**	0.362**	0.155**	0.358**	0.626**	0.468**	0.550**	1.000

** p < 0.05; *** p < 0.01.

& Larcker, 1981). The reliability is acceptable if CR (composite reliability) is 0.70 or higher and AVE (Average Variance Extracted) is 0.50 or higher. As shown in Tables 3 and 4, all factors meet both criteria for acceptable reliability.

Discriminant validity was checked by factor analysis. Because multi-item constructs measure each variable, factor analysis with varimax was employed to check unidimensionality among the items (see Tables 3 and 4).

The measurement model should be considered whether given constructs are formative or reflective. Reflective constructs have observed measures that are affected by a latent construct, but formative constructs are a composite of multiple measures (Petter, Straub, & Rai, 2007). Indicators of the reflective model should be interchangeable and have the same or similar contents. The model of this study has a single theoretical construct of IPTV service quality and three empirical measures of that construct (e.g. design, security, and customer service). From a measurement side, IPTV service quality can be viewed as being an unobservable variable, measured by three observed variables, say x1, x2, x3, x4, and so on. In addition, direction of causality is from service quality construct to sub-constructs (design, security, and customer service) in the same line with regarding the eta, service quality as causing the indicators. Therefore, IPTV service quality was modeled as second-order construct based on reflective constructs.

We suggested a second-order model of IPTV service quality which was tested using the three first-order factors such as design, security, and customer service. In this study, the model fit is assessed in terms of seven different indices: root mean square residual (RMR), root mean square error approximation (RMSEA), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), normed fit index (NFI), incremental fit index (IFI), and comparative fit index (CFI). The criteria for an acceptable model were as follows: RMR of 0.08 or lower; RMSEA of 0.08 or lower; GFI of 0.09 or higher; AGFI of 0.09 or higher; NFI of 0.09 or higher; IFI of 0.09 or higher; CFI of 0.09 or higher. The most recommended fit indices were within the recommended level, and fit indices showed a good model fit (Chi-Square = 1513.608, df = 61, RMR = 0.053, RMSEA = 0.042, GFI = 0.945, AGFI = 0.912, NFI = 0.961, IFI = 0.990, and CFI = 0.989). Tables 3 and 4 showed results of a confirmatory factor analysis.

4.3. Hypotheses testing

In order to confirm the hypothesized relations among this study's constructs, SEM (structural equation modeling) is performed. The fit indices are used to test the fit of the structural model, and it has a reasonable fit (Chi-Square = 739.26, df = 628, RMR = 0.073, RMSEA = 0.030, GFI = 0.855, AGFI = 0.811, NFI = 0.909, IFI = 0.985, CFI = 0.985). Fig. 2 shows structural equation modeling results for hypotheses.

IPTV service quality positively affected the perceived usefulness (t = 6.221), perceived ease of use (t = 7.552), and perceived

Table 3
Factor analysis of IPTV service quality.

Constructs	Scale items	Exploratory factor analysis			Confirmatory factor analysis		Cronbach' α	CR	AVE
		(1)	(2)	(3)	Standardized loading	t-Value			
Security (1)	Se3	0.847	0.248	0.073	0.842	–	0.929	0.986	0.934
	Se2	0.844	0.242	0.111	0.869	15.527***			
	Se1	0.840	0.269	0.096	0.867	15.236***			
	Se4	0.830	0.244	0.198	0.823	13.972***			
	Se5	0.818	0.206	0.212	0.825	14.014***			
Design (2)	De3	0.291	0.854	0.197	0.885	–	0.914	0.985	0.943
	De2	0.238	0.793	0.322	0.877	16.556***			
	De4	0.327	0.771	0.272	0.819	14.717			
	De1	0.305	0.734	0.238	0.871	13.770***			
Customer service (3)	Cs4	0.129	0.285	0.807	0.734	–	0.853	0.967	0.883
	Cs3	0.327	0.020	0.799	0.603	10.119***			
	Cs1	0.010	0.329	0.779	0.843	10.931***			
	Cs2	0.135	0.342	0.761	0.819	10.740***			

Note. Extraction method: principal component analysis. Rotation method: Varimax with Kaiser normalization. ***p* < 0.05; ****p* < 0.01.

enjoyment (*t* = 7.330), therefore, H1–H3 were supported. However, contrary to the original TAM, the perceived ease of use was found to have no significant effect on perceived usefulness, resulting in the rejection of H4. Perceived ease of use had a positive effect on perceived enjoyment (*t* = 2.988), and perceived usefulness had a positive effect on attitude (*t* = 6.715), so H5 and H6 are supported. But the perceived ease of use and perceived enjoyment did not have a positive effect on attitude, so H7 and H8 were not supported. Attitude (*t* = 9.300), trust (*t* = 2.594), and satisfaction (*t* = 3.017) were positively related with repurchase intention, Therefore, H9–H11 were accepted.

5. Results and discussion

Despite the importance of IPTV service, there have been few academic studies on IPTV service quality and the process of repurchase intention. In order to reveal the impact on customer attitude and repurchase intention of the IPTV service quality, this research proposed customer acceptance of IPTV service based on a modified TAM. The results and contributions of this study are follows.

First, what IPTV customers are looking for is summarized as design, security, and customer service according to the literature

review based on meta-analysis, which is strongly supported by second-order factor analysis. IPTV operator and marketer have to adjust to the change of user needs and wants based on three main components of service quality. Shin (2007) investigated the customers' intention to accept the IPTV service, and proposed that customers can enjoy various services on the IPTV format. The results of his study showed that the quality of contents and interactive services are indeed significant predictors of the diffusion of IPTV. This study examined the service quality about IPTV, which showed critical factors for IPTV users. By comparison with the existing studies, this study empirically examined IPTV users to estimate the service quality. It will be worthwhile for future research to trace the customized services of the IPTV.

Second, IPTV service quality had a positive effect on perceived usefulness, perceived ease of use, and perceived enjoyment. This is consistent with the Lin and Lu (2000)'s results that the information quality and system quality had a positive perceived usefulness. Although several studies (Bagozzi & Warshaw, 1992; Van der Heijden, 2004) indicate that the direction of influence in case of enjoyment may also be the other way around, we assume that enjoyment makes individuals underestimate the difficulty associated with using IPTV since they simply enjoy the process itself

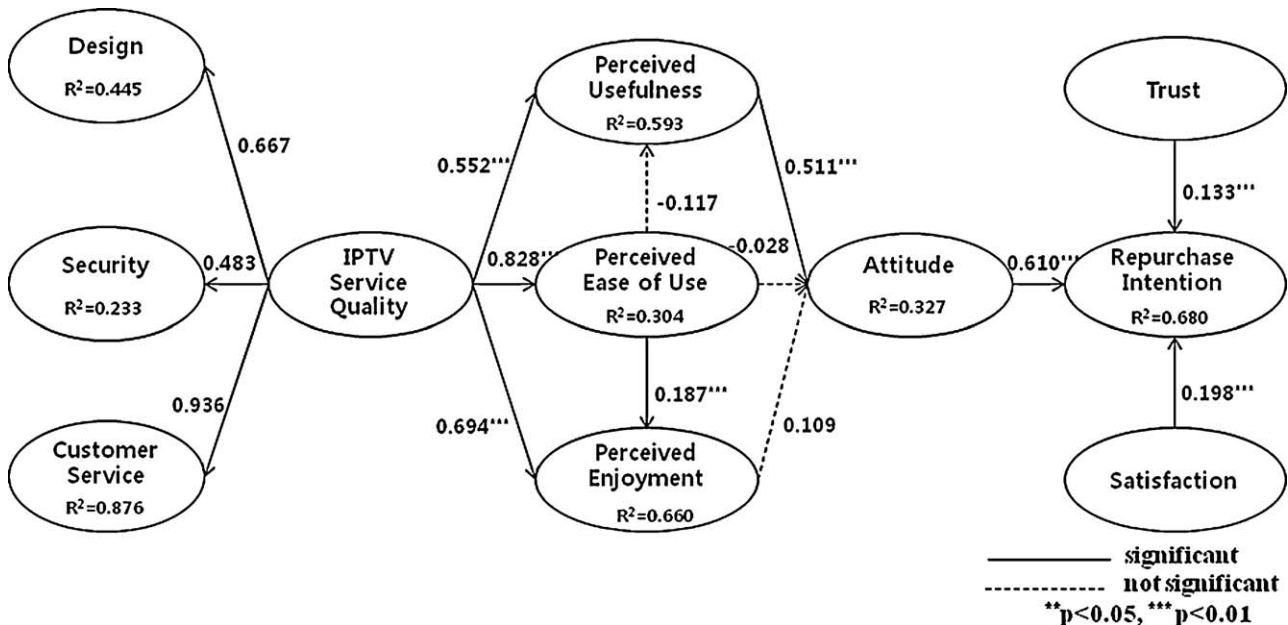


Fig. 2. Result of the research model.

Table 4
Factor analysis.

Constructs	Scale items	Exploratory factor analysis							Confirmatory factor analysis		Cronbach's α	CR	AVE
		(4)	(5)	(6)	(7)	(8)	(9)	(10)	Standardized loading	t-Value			
Satisfaction (4)	S1	0.815	0.147	0.189	0.151	0.150	0.077	0.259	0.872	–	0.921	0.988	0.944
	S4	0.801	0.104	0.207	0.022	0.168	0.230	0.208	0.862	16.359***			
	S3	0.786	0.096	0.152	0.343	0.213	0.079	0.109	0.842	16.102***			
	S2	0.671	0.033	0.093	0.304	0.459	0.087	0.038	0.748	12.896***			
Perceived ease of use (5)	Peu2	0.059	0.897	0.090	0.139	0.004	0.133	0.064	0.874	–	0.933	0.984	0.938
	Peu1	0.090	0.896	0.157	0.119	0.009	0.049	0.014	0.863	16.383***			
	Peu3	0.036	0.872	0.050	0.134	0.016	0.227	0.013	0.902	17.824***			
	Peu4	0.151	0.854	0.083	0.238	0.035	0.082	0.064	0.890	17.346***			
Perceived usefulness (6)	Pu3	0.044	0.073	0.840	0.230	0.278	0.152	0.009	0.915	–	0.920	0.982	0.93
	Pu2	0.225	0.098	0.834	0.215	0.045	0.088	0.072	0.854	17.970***			
	Pu4	0.232	0.146	0.806	0.225	0.052	0.206	0.200	0.837	16.485***			
	Pu1	0.181	0.167	0.761	0.173	0.215	0.248	0.110	0.841	16.980***			
Perceived enjoyment (7)	Pe2	0.254	0.195	0.195	0.835	0.008	0.121	0.136	0.862	–	0.925	0.986	0.943
	Pe3	0.110	0.112	0.264	0.835	0.126	0.234	0.034	0.888	17.109***			
	Pe4	0.125	0.291	0.207	0.737	0.158	0.223	0.157	0.864	16.514			
	Pe1	0.159	0.349	0.282	0.715	0.156	0.212	0.072	0.869	16.676***			
Repurchase intention (8)	Rri2	0.265	0.021	0.160	0.134	0.841	0.230	0.220	0.933	–	0.942	0.987	0.961
	Rri3	0.236	0.039	0.207	0.136	0.828	0.211	0.230	0.941	25.612***			
	Rri1	0.395	0.058	0.130	0.021	0.715	0.216	0.315	0.888	21.021***			
	T3	0.109	0.168	0.206	0.142	0.236	0.795	0.034	0.696	–			
Trust (9)	T2	0.212	0.244	0.218	0.253	0.123	0.775	0.066	0.703	10.814***	0.877	0.981	0.927
	T4	0.173	0.070	0.177	0.283	0.238	0.635	0.330	0.859	11.269***			
	T1	0.365	0.301	0.198	0.290	0.205	0.598	0.075	0.892	11.599***			
Attitude (10)	At1	.303	0.100	0.078	0.124	0.317	0.111	0.788	0.814	–	0.881	0.975	0.93
	At2	.310	0.013	0.182	0.158	0.403	0.137	0.714	0.903	14.943***			
	At3	.274	0.002	0.221	0.155	0.335	0.130	0.531	0.828	13.504***			

Note. Extraction method: principal component analysis. Rotation method: Varimax with Kaiser normalization. ** $p < 0.05$; *** $p < 0.01$.

and do not perceive it to be arduous. The efforts to improve various aspects of IPTV service quality will enhance the convenience and usefulness of customer services as well as assist in creating a positive attitude in customers.

Third, the partial purpose of this study was to extend TAM to IPTV user behavior. Concerned with the factors on TAM, the positive effects between perceived ease of use and perceived enjoyment and perceived usefulness and user attitude were supported showing a possible future direction of strategies development in the IPTV industry. However, the others were rejected leaving enough grounds for considerations. Though the results of this study differ from the ones conducted with traditional TAM research, the expanded TAM research shows similar results (Ha & Stoel, 2009; Shin, 2009a). Ha and Stoel (2009) being researched user acceptance of on-line shopping, showed the result that the perceived ease of use did not have a positive effect on attitude. Jung et al. (2009) proposed that perceived ease of use unexpectedly had no influence on perceived usefulness, and this result indicated perceived ease of use plays a trivial role in the extended TAM. The result of our study is also similar to results about previous researches because we survey targeting early adopters of IPTV. IPTV marketers must develop a specific application or general strategic approach that solves the needs of a sizable segment of the early major IPTV users providing differentiated contents to arouse customer's attention.

Finally, the present study extended the TAM by integrating the construct of repurchase intention into the framework. It was revealed that positive user's attitude, trust, and satisfaction had a positive effect on repurchase intention. That is, research findings have shown that user attitude, trust, and satisfaction are different antecedents of repurchase intentions. As the user attitude, trust and satisfaction are sorts of individual's intention to repurchase, IPTV managers are particularly interested in understanding how an individual's intention to repurchase is formed theoretically, and what factors influence such a process empirically.

6. Limitation and future research

Limitations and directions for future research of this study are as follows. First, this study does not consider the IPTV service characteristics like communication, personalization, and bundle, because IPTV services do not support real time communication and direct purchase system. In the future, a framework considering IPTV service characteristics for vitalizing its industry should be studied. Second, the target population of this study is limited in period of use and experience, and unfit for the estimation of IPTV service. Therefore, future studies should research users that have a lot of experience using IPTV services in the future. Third, although several recent studies found that different user groups perceive new technology differently, this research did not separate analysis unit. However, it is also important to find out how conceptualization of repurchase intention in IPTV is classified. We are planning to contrive the following research to reveal the difference between different groups of users.

7. Implications for research and practice

The IPTV industry has attracted a great deal of attention along with the digital convergence which generates new business opportunities and benefits consumers. This study addressed the critical factors need to boost the repurchase intention in the IPTV service, which is focused on the dimension of quality and reveals the mediating role of TAM variables and attitude. Our findings have several research implications.

First, past studies relating IPTV conducted a survey of the potential users about IPTV or users of the similar services (e.g. DMB,

t-commerce, and TV via PC). Shin (2007) analyzed the model of Internet-based TV, and Jung et al. (2009) considered a mobile TV service such as DMB services. These are TV services based on the all devices, but this study is IPTV services based on the home network providing the KT, SK, and LG company. Therefore, the results of this study can provide various information for researches relating IPTV services based on the home networking.

Second, this study showed the importance of IPTV service quality. Despite the fact that IPTV is technically ahead, it is still insufficient. Customers have found services such as channel switching speed, movement speed of the two-way screen, and reaction speed of the remote control more difficult to use than they expected. IPTV cannot perfectly fulfill the quality of all these services during the first stage, researchers have to propose important factors according to the each service.

Finally, this study helps sharpen our understanding of users' acceptances about IPTV services. It was found that the service quality including design, security, and customer service were important IPTV services measures. Previous researches demonstrated the importance of perceived content and system quality (Shin, 2009a, 2009b), but IS researchers have failed to delve into service quality (McKinney, Yoon, & Zahedi, 2002). This study measured the services quality of IPTV as new convergence technology, thus it can impart a new meaning to the IS and marketing fields.

Our research has strong practical implications as the industry moves forward with IPTV service deployments. First, based on research findings concerned with IPTV qualities, IPTV marketers are required to provide more refined and robust crucial service qualities including design, security, and user service while transitioning IPTV into a mass-market service. IPTV services should become more personalized and user-centric in the perspective of implementation of service quality. The ability to get rich contents, guarantee the privacy, and confirm a user-friendly customized service will enable a company to obtain a sustainable competitive advantage.

Second, perceived enjoyment being added by considering IPTV media characteristics is verified as an important variable which is seen as a determinant of customer attitude and an outcomes of perceived ease of use. IPTV marketing managers should not neglect that perceived enjoyment is main factors capturing the features of productivity and entertainment associated with IPTV business, while they have to keep in mind that TAM not only is still regarded as an acceptable model for the adoption and repurchase of IPTV services but also has an interactive structural relationship with service quality.

Third, perceived usefulness of the TAM's basic variable had a positive influence on attitude in the process of forming a positive attitude, but perceived ease of use had not an effect on the attitude. This result reflects the purpose that customers are watching the IPTV. The IPTV users can gain useful information of education, weather, and stock, but watching methods of IPTV is similar to the existing TV. For example, IPTV can choice various channels, but does not support interaction in real time and personalized information so far. If the ease of use of IPTV is improved by interactive services, voice support services and so on, IPTV services are able to improve the benefits of the companies.

Fourth, unlike the existing research that used TAMs, all of which concluded to strengthen the positive attitude or use and reuse intention in customers, this paper found that marketing variables like trust and satisfaction are critical factors in the process of forming repurchase intention which accelerate the possibilities of strategic fit. IPTV managers are required not only to delineate the effects that user trust, satisfaction, and attitude have on repurchase intention better but also to grasp the interactions between IPTV service quality and extended TAMs. That is, IPTV marketer should take initiative to enhance repurchase intention not only focusing on the integrative interaction among service quality, perceived ease

of use and usefulness, enjoyment, and finally repurchase intention, but also clearly understanding the requirements of customer satisfaction and customer trust. This study also implies that repurchasing intention was intensified by the various paths, which were not considerate in the formation of marketing strategy, such as trust → repurchase intention and satisfaction → repurchase intention. So, the Internet marketers must make an effort not only to strengthen the conventional casual linkage between them but also to consolidate the various intangible connections leading to boost purchasing and repurchasing intention.

8. Concluding remarks

The new IPTV technology can offer ubiquitous TV broadcasting based on the Internet protocol, allowing video-on-demand and other services. IPTV users are able to search for watch contents they want based on TV sets, thus we study users' acceptance of IPTV services. This study demonstrates the importance of the IPTV service quality consists of the design, security, and customer service, and the relationships between the IPTV service quality and perceived usefulness, perceived ease of use, and perceived enjoyment. We also study the relationships among the attitude, trust, satisfaction, and repurchase intention. Results of this study showed that IPTV service quality had a positive effect on the perceived usefulness, perceived ease of use, and perceived enjoyment, and the perceived usefulness had an influence on the attitude. Based on empirical results, we suggest managerial implications about IPTV business strategies, focusing on the IPTV service quality formed design, security, and customer service. Trust and satisfaction had a significant effect on the repurchase intention. IPTV marketers should take the initiative to enhance trust and satisfaction in order to encourage the repurchase intention of customers toward IPTV. This study showed that extended TAM is applicable in the model for measurement users' acceptance toward new information system, and can provide various implications for experts in the IS and marketing fields.

References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179–211.
- Bagozzi, D. F., & Warshaw, P. (1992). Extrinsic and intrinsic motivation to use computers in the workplace. *Journal of Applied Social Psychology*, 22(14), 1111–1132.
- Best, K. (2006). *Design management: Managing design strategy. Process and Implementation*. Switzerland: AVA Publishing SA.
- Bilgehan, E., & Matthews, E. P. (2008). Analysis and realization of IPTV service quality. *Bell Labs Technical Journal*, 12(4), 195–212.
- Brix White paper (2006). Service quality matters for IPTV: A lifecycle approach. Available from <http://www.brixnet.com>.
- Brown, S. A., Massey, A. P., Montoya-Weiss, M. M., & Burckman, J. R. (2002). Do I really have to? User acceptance of mandatory technology. *European Journal of Information Systems*, 11, 283–295.
- Cao, M., Zhang, Q., & Seydel, J. (2005). B2C e-commerce web site quality: An empirical examination. *Industrial Management & Data Systems*, 105(5), 645–661.
- Chau, P. Y. K., & Vincent, S. K. L. (2003). An empirical investigation of the determinants of user acceptance of internet banking. *Journal of Organizational Computing & Electronic Commerce*, 13(2), 123–145.
- Childers, T. L., Carr, C. L., Peck, J., & Carson, S. (2001). Hedonic and utilitarian motivations for online retail shopping behavior. *Journal of Retailing*, 77, 511–535.
- Chung, I. K., & Lee, M. M. (2003). A study of influencing factors for repurchase intention in internet shopping malls. In *Proceeding of the international parallel and distributed processing symposium* Nice, France, 243a.
- Cisco White Paper (2007). Supporting the IP multimedia subsystem for mobile, wireline, and cable providers. Available from http://www.cisco.com/en/US/netsol/ns549/networking_solutions_white_paper0900aecd_80395cb0.shtml.
- Davis, F. (1989). Perceived usefulness, perceived ease-of-use, and user acceptance of information technology. *MIS Quarterly*, 319–340.
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35(8), 982–1003.
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1992). Extrinsic and intrinsic motivation to use computers in the workplace. *Journal of Applied Social Psychology*, 22, 1111–1132.
- De Cannière, M. H., De Pelsmacker, P., & Geuens, M. (2009). Relationship quality and the theory of planned behavior models of behavioral intentions and purchase behavior. Ghent University, Working Paper, pp. 1–39.
- Delone, W., & McLean, E. (1992). Information systems success: The quest for the dependent variable. *Information Systems Research*, 3(1), 60–95.
- Delone, W., & McLean, E. (2003). The Delone and McLean model of information systems success: A ten-year update. *Journal of Management Information Systems*, 19(4), 9–30.
- Dick, A. S., & Basu, K. (1994). Customer loyalty: Toward an integrated conceptual framework. *Journal of the Academy of Marketing Science*, 22(2), 99–113.
- Doney, P. M., & Cannon, J. P. (1997). An examination of the nature of trust in buyer-seller relationships. *Journal of Marketing*, 61(2), 35–51.
- Fisk, R. P., Brown, S. W., & Bitner, M. J. (1993). Tracking the evolution of the services marketing literature. *Journal of Retailing*, 69(1), 61–103.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50.
- Fullerton, G., & Taylor, S. (2002). Mediating, interactive, and non-linear effects in service quality and satisfaction with services research. *Revue Canadienne des Sciences de l'Administration* 2002, 19(2), 124–136.
- Gefen, D., Karahanna, E., & Straub, D. W. (2003). Inexperience and experience with online stores: The importance of TAM and trust. *IEEE Transactions on Engineering Management*, 50(3), 307–321.
- Guangying, H., & Dominique, H. (2009). Virtual worlds adoption: A research framework and empirical study. *Online Information Review*, 33(5), 889–900.
- Ha, S., & Stoel, L. (2009). Consumer e-Shopping acceptance: Antecedents in a technology acceptance model. *Journal of Business Research*, 62, 565–571.
- Hellier, P. K., Geursen, G. M., Rodney, A. C., & Rickard, A. J. (2003). Customer repurchase intention: A general structural equation model. *European Journal of Marketing*, 37(11/12), 1762–1800.
- Homburg, C., & Giering, A. (2001). Personal characteristics as moderators of the relationship between consumers satisfaction and loyalty: An empirical analysis. *Psychology and Marketing*, 18(1), 43–66.
- Jung, Y., Perez-Mira, B., & Wiley-Patton, S. (2009). Consumer adoption of mobile TV: Examining psychological flow and media content. *Computers in Human Behavior*, 25(1), 123–129.
- Kerpez, K., Waring, D., Lapiotis, G., Lyles, J. B., & Vaidyanathan, R. (2006). IPTV service assurance. *IEEE Communications Magazine*, 166–172.
- Kim, M., & Sugaya, M. (2006). IPTV in Korea and Japan. In *PTC'06 proceedings* (pp. 1–16).
- Kim, B., Choi, M., & Han, I. (2009). User behaviors toward mobile data services: The role of perceived fee and prior experience. *Expert Systems with Applications*, 36, 8528–8536.
- Kim, H. B., Kim, T., & Shin, S. W. (2009). Modeling roles of subjective norms and eTrust in customers' acceptance of airline B2C eCommerce websites. *Tourism Management*, 30, 266–277.
- Korea IT Times (2009). One-year anniversary of the commercialization of IPTV. *Real-Time News*, Wednesday, December 16, 2009.
- Lederer, A., Maupin, D., Sena, M., & Zhuang, Y. (2000). The technology acceptance model and the world wide web. *Decision Support Systems*, 29(3), 275–282.
- Lee, R. (2009). *IPTV market tracker: Telco TV on track to reach 105 million subscribers in five years*. iSuppli.
- Li, E. (2007). Perceived importance of information system success factors: A meta analysis of group differences. *Information & Management*, 32(1), 15–28.
- Liao, C. H., & Tsou, C. W. (2009). User acceptance of computer-mediated communication: The skype out Case. *Expert Systems with Applications*, 36, 4595–4603.
- Lim, H. M., Kim, K. J., & Yoo, J. H. (2008). Analysis of IPTV key service quality indicators based on QFD methodology. *KNOM Review*, 11(1)
- Lin, J. C. C., & Lu, H. (2000). Towards an understanding of the behavioural intention to use a web site. *International Journal of Information Management*, 20, 197–208.
- McKinney, V., Yoon, K., & Zahedi, F. (2002). The measurement of web-customer satisfaction: An expectation and disconfirmation approach. *Information Systems Research*, 13(3), 296–315.
- McKnight, D. H., Choudhury, V., & Kacmar, C. (2002). Developing and validating trust measures for e-commerce: An integrative typology. *Information Systems Research*, 13(3), 334–359.
- Monsuwe, T. P. Y., Dellart, B. G. C., & de Ruyter, K. (2004). What drives consumers to shop online? A literature review. *International Journal of Service Industry Management*, 15(1), 102–121.
- Morgan, R. M., & Hunt, S. D. (1994). The commitment-trust theory of relationship marketing. *Journal of Marketing*, 58(3), 20–38.
- MRG (2009). IPTV global forecast (2009–2013). International Television Expert Group.
- Ong, C. S., Lai, J. Y., & Wang, Y. S. (2004). Factors affecting engineers' acceptance of asynchronous e-learning systems in high-tech companies. *Information and Management*, 41, 795–808.
- Parasuraman, A., Zeithaml, V., & Berry, L. (1985). A conceptual model of service quality and its implications for future research. *Journal of Marketing*, 49(4), 41–50.
- Petter, S., Straub, D., & Rai, A. (2007). Specifying formative constructs in information systems research. *MIS Quarterly*, 31(4), 623–656.
- Pitt, L., Watson, R., & Kavan, C. B. (1995). Service quality: A measure of information systems effectiveness. *MIS Quarterly*, 19(2), 173–187.
- Rebert, H. (2006). Using design to drive loyalty. *Design Management Review*, 17(1), 40–46.
- Reichheld, F. F. (1993). Loyalty-based management. *Harvard Business Review*, 71, 64–73.

- Reichheld, F. F., & Scheffer, P. (2000). E-loyalty: Your secret weapon on the web. *Harvard Business Review*, 78(4), 105–113.
- Roest, H., & Pieters, R. (1997). The nomological net of perceived service quality. *International Journal of Service Industry Management*, 8(4), 336–351.
- Sanchez-Franco, M. J. (2010). WebCT—The quasimoderating effect of affective quality on and extending technology acceptance model. *Computers & Education*, 54, 37–46.
- Weniger, S. (2010). User adoption of IPTV: A research model. In *23rd Bled eConference eTrust: implications for the individual, enterprises and society*.
- Secure media. (2008). The business of IPTV. *Behaviour & Information Technology*, 28(4), 361–372.
- Seddon, P. B. (1997). A respecification and extension of the DeLone and McLean model of IS success. *Information Systems Research*, 8(3), 240–253.
- Sheth, J. N., & Parvatiyar, A. (1995). Relationship marketing in consumer markets: Antecedents and consequences. *Journal of the Academy of Marketing Science*, 255–271.
- Shih, H. P. (2004). An empirical study on predicting user acceptance of e-shopping on the web. *Information and Management*, 41, 351–368.
- Shim, G. Y., Lee, S. H., & Kim, Y. M. (2008). How investor behavioral factors influence investment satisfaction, trust in investment company, and reinvestment intention. *Journal of Business Research*, 61, 47–55.
- Shin, D. H. (2007). Potential user factors driving adoption of IPTV. What are customers expecting from IPTV? *Technological Forecasting & Social Change*, 74, 1446–1464.
- Shin, D. H. (2009a). An empirical investigation of a modified technology acceptance model of IPTV. *Behaviour & Information Technology*, 28(4), 361–372.
- Shin, D. H. (2009b). Determinants of customer acceptance of multi-service network: An implication for IP-based technologies. *Information & Management*, 46, 16–22.
- Taylor, S., & Todd, P. A. (1995). Understanding information technology usage: A test of competing models. *Information Systems Research*, 6(2), 144–176.
- Thorsten, H. T., & Alexander, K. (1997). The impact of customer satisfaction and relationship quality on customer retention: A critical reassessment and model development. *Psychology & Marketing*, 14(8), 737–765.
- Thorsten, T., & Rost, K. (2003). Trust, involvement profile and customer retention modeling, effects and implications. *International Journal of Technology Management*, 26(5–6), 621–639.
- Van der Heijden, H. (2004). User acceptance of hedonic information systems. *Management Information Systems Quarterly*, 28(4), 695–704.
- Venkatesh, V., & Morris, M. G. (2000). Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behaviour. *MIS Quarterly*, 24(1), 115–139.
- Wolfinger, M., & Gilly, M. (2003). eTailQ: dimensionalizing, measuring and predicting e-tail quality. *Journal of Retailing*, 79(3), 183–198.
- Yi, Y. (1990). A critical review of consumer satisfaction. In V. A. Zeithaml (Ed.), *Review of marketing* (pp. 68–123). Chicago, IL: American Marketing Association.
- Yi, Y., & La, S. (2004). What influences the relationship between customer satisfaction and repurchase intention? Investigating the effects of adjusted expectations and customer loyalty. *Psychology & Marketing*, 21(5), 351–373.
- Yu, H., Zheng, D., Zhao, B. Y., & Zheng, W. (2006). Understanding user behavior in large-scale video-on-demand systems. In *EuroSys*, 333–344.
- Zeithaml, V. A., Berry, L. L., & Parasuraman, A. (1996). The behavioral consequences of service quality. *Journal of Marketing*, 60(2), 31–46.
- Zhengchuan, X. U., Chenghong, Z., & Hong, L. (2008). A contextual acceptance model of mobile commerce based on TAM. In *The third international multi-conference on computing in the global information technology* (pp. 75–79).

Dr. Hyeong Yu Jang is Assistant Professor at the Department of Business Administration and senior researcher of business and economics research institute, Gyeongsang National University, Korea. He received Ph.D. degree in Business Administration from the Gyeongsang National University. His research focuses on online marketing management, relationship marketing, consumer behaviour and new product diffusion.

Mi Jin Noh is a BK21 research fellows in Kyungpook National University, South Korea. She received a PhD in Management Information System from Kyungpook National University, South Korea. She was a researcher in the Electronic Telecommunication Research Institute (ETRI), and a teaching professor in Kyungpook National University. Her research is on mobile commerce, green IT, u-healthcare, social commerce and so on. Her papers have been appeared in the Telecommunications Policy, Korean Management Review, Journal of Business Research, The Journal of Information Systems and so on.