ID 15577

New Media in Social Contexts: Toward a Research Model on User Beliefs and Intentions to Use

ABSTRACT

This paper proposes a research model, incorporating cognitive absorption, a state of deep involvement, for studying the formation of user beliefs and intention to use new media. Adjusting the work of Agarwal and Karahanna (2000) from organizational to social contexts, the proposed model (1) emphasizes enjoyment over usefulness, (2) stresses the importance of user's perception of media-specific factors, and (3) incorporates a link between buying related aspects preceding the intention to use. The paper contributes to theory development on the formation of user beliefs and intentions to use new media in social contexts.

Keywords: New media adoption, user beliefs, intention to use IT, new media, social contexts, hedonic contexts, Cognitive Absorption

INTRODUCTION

Asking "why do some persons adopt information technologies, whereas others reject them?", individual behavior towards new IT has generated substantial interest among researchers and practitioners. Individual beliefs have been shown to play an important role for the adoption of IT and have gained considerable attention in early IS research (e.g., Adams, Nelson & Todd 1992; Davis, Bagozzi & Warshaw 1989; Maish 1979; Robey 1979). However, according to Agarwal, Sambamurthy, and Stair (1997), early research has neglected to examine how user beliefs, such as perceived usefulness and perceived ease of use, are formed. To overcome that gap, the authors built on TAM research (e.g., Davis 1989) and introduced a construct labeled cognitive absorption (CA), defining it as "a state of deep involvement with software" (p. 294). The construct has been substantiated as antecedent of the formation of user beliefs and intentions to use IT in organizational contexts. Since then it has been frequently used for respective research tasks (e.g., Agarwal & Karahanna 2000; Leonhard & Riemenschneider 2008; Roca, Chiu & Martinez 2009; Saade & Bahli 2005; Wright & Granger 2001).

In addition to IT use in organizational settings, we also see overwhelming IT availability and usage in social contexts. To simplify the terminology, from now on we speak of *new media adoption and usage in social contexts* (instead of IT adoption and usage in organizational settings). By *social contexts*, we mean non-organizational and non-for-profit contexts. As *new media*, we mean predominantly hedonic systems that "aim to provide self-fulfilling rather than instrumental value for the users, are strongly connected to home and leisure activities, focus on the fun aspect of using information systems, and encourage prolonged rather than productive use" (van der Heijden 2004, p. 695). They primarily serve to fulfil users' entertainment needs (Vorderer, Klimmt & Ritterfeld 2004). We characterize new media usage in social contexts as

mostly volitional. Moreover, we assume that the perceived quality of new media, i.e., the perceived quality of media-specific factors, includes affective and cognitive components and shapes user beliefs and the intentions to use the new media (see also Lederer, Maupin, Sena & Zhuang 2000). Finally, the adoption and usage of new media in social (non-organizational) settings, is typically preceded or at least complemented by an intention to buy (or pay for access to) new media (Pavlou & Fygenson 2006).[1]

Transferring the well established IT adoption research to new media in social settings, raises the follow-up question "why do some persons adopt new media in social contexts, whereas others reject them?". Although studying the drivers of user adoption, the formation of user beliefs and the intention to use is crucial, respective studies regarding new media in social contexts are rare and the theoretical grounding is still missing.

Here we aim to make a contribution. *We study the formation of user beliefs and intentions to use new media in social contexts*. To that purpose we develop a research model building upon the CA construct. In order to reflect the move from organizational to social contexts, we see the need to somehow (1) emphasize enjoyment over usefulness (Benbasat & Barki 2007; van der Heijden 2004), (2) stress a user's perception of IT- or media-specific factors (Lederer, Maupin, Sena & Zhuang 2000; Lu, Yu, Liu & Yao 2003; Zhang, Li & Sun 2006), and (3) incorporate a link between intention to use and buying related aspects such as the relevance of price levels (Pavlou & Fygenson 2006).

The remainder of the paper is structured as follows. Next we provide some research background to new media adoption focusing on the concept of CA. Adjusting the work of Agarwal and Karahanna (2000), we then propose a research model for studying the formation of user beliefs

1 Debatable exceptions are the use of specific media applications or content included in flat rate access and re-financed via advertising models.

and intentions to use with regard to new media in social settings. After that, we outline the research design for estimating the model, before we discuss the relevance of the research topic and the suitability of our research model in the fifth section. We close with a summary of our contribution and needs for future research.

RESEARCH BACKGROUND

Building on the TAM, which has been proposed by Davis (1989) to better understand and explain individuals behavior toward new IT, Agarwal, Sambamurthy, and Stair (1997) published one of the first research models including the construct of CA in IS research. They describe CA as "a state of deep involvement with software that is exhibited through three dimensions" (Agarwal, Sambamurthy & Stair 1997, p. 294), namely flow[2], computer playfulness, and ease of use. Within their research, they model CA as important antecedent of perceived usefulness.

In 2000, Agarwal and Karahanna offer a revised CA research model (see Figure 1*)*. They maintain the definition of CA as a state of deep involvement with software, but they revise the underlying dimensions of the CA construct based on three closely interrelated streams of research, (1) the state of flow (Csikszentmihalyi 1975; Tervino & Webster 1992),[3] (2) the trait of absorption (Tellegen & Atkinson 1974; for an overview see Roche & McConkey 1990), and (3) the notion of cognitive engagement (Webster & Ho 1992). Instead of Agarwal, Sambamurthy, and Stair in 1997, Agarwal and Karahanna (2000) depict temporal dissociation, focused immersion, heightened enjoyment, control and curiosity as CA dimensions. They understand

2 Flow refers to an individual's autotelic experience of complete involvement with an activity (Csikszentmihalyi 1975). Trevino and Webster (1992) propose four dimensions of the flow state, (1) control, (2) attention focus, (3) intrinsic interest, and (4) curiosity.

3 In HCI, Finneran and Zhang (2005), Pilke (2004), Sherry (2004), Trevino and Webster (1992) find that flow has an important influence on attitudes towards IT and in turn on IT adoption decisions.

temporal dissociation as the inability to register the passage of time while being engaged in interaction. *Focused immersion* expresses the experience of total engagement when other attentional demands are ignored. *Heightened enjoyment* captures the pleasurable aspects of the interaction; *control* refers to the user's perception of being in charge with the interaction, and finally, *curiosity* describes the extent the experience arouses an individual's sensory and cognitive curiosity. As CA antecedents, Agarwal and Karahanna (2000) consider personal innovativeness in the domain of IT and computer playfulness. Personal innovativeness in the domain of IT is supposed to exhibit a positive influence on CA, since people with a general disposition to be innovative in experimentation with IT are expected to be more likely to experience CA. Borrowing from Webster and Martocchio (1992, p. 204), they understand computer playfulness as "the degree of cognitive spontaneity in microcomputer interactions". Agarwal and Karahanna (2000) argue that computer playfulness positively influences CA, since computer playfulness is a significant determinant of flow, and – in turn – CA is similar to the state of flow.

Agarwal and Karahanna (2000) propose CA to exhibit a positive influence on perceived ease of use because "the intrinsically motivating state of CA creates perceptions of a lower cognitive burden because the individual is experiencing pleasure from the activity and is willing to expend more effort on it" (Agarwal & Karahanna 2000, p. 676). They also see a positive influence of CA on perceived usefulness. They justify this assumption with cognitive dissonance, a state which arises when there are dissonant or non-fitting relations among cognitive elements (Festinger 1962). The presence of dissonance gives rise to actions aiming at reducing or eliminating that dissonance. In order to reduce cognitive dissonance a person is likely to attribute instrumental value to rationalize her behavior. Agarwal and Karahanna (2000) state that – based on TAM –

the effects of CA on intention to use are mediated by perceived ease of use and perceived usefulness, whereby perceived ease of use has a positive influence on perceived usefulness as prior research has shown (e.g., Davis, Bagozzi & Warshaw 1992). Following Venkatesh and Davis (1996), they change self-efficacy from being an antecedent of CA to self efficacy having a direct influence on perceived ease of use and perceived usefulness.

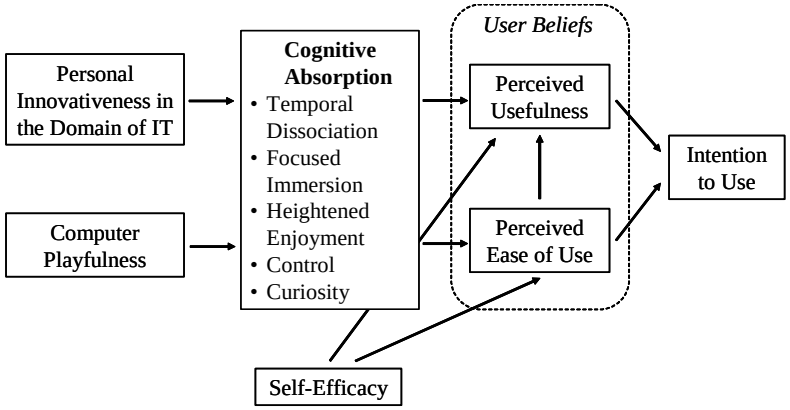

Figure 1: Agarwal and Karahanna (2000): CA Research Model (After: Agarwal, and Karahanna 2000, p. 674)

In IS, most *conceptual research on CA*[4] has built on Agarwal and Karahanna (2000). Even slight changes to the definition are exceptional. Chandra, Srivastava, and Theng (2009, p. 3) and Zhang, Li, and Sun (2006, p. 207) refer to a "state of deep involvement or a holistic experience an individual has with an IT" and Thomas (2006, p. 1093) uses CA as a "state of involvement in a technology". Changes to the CA dimensions are also rare. Saade and Bahli (2005) refer to the state of CA consisting of three dimensions, temporal dissociation, focused immersion, and heightened enjoyment. Wakefield and Whitten (2006) conceptualize CA without heightened enjoyment.

4 E.g., Leong, Ho, and Zhang (2005), Leonhard and Riemenschneider (2008), Lin (2009), Shang, Chen, and Shen (2005), Suki, Ramayah, and Suki (2008), Roca, Chiu, and Martinez (2006), Wright and Granger (2001).

Appendix A presents an overview of *prior empirical studies on CA*. They show ambiguous results regarding CA antecedents and CA influences. So earlier works illustrate the complex and diverse relationships between CA and user beliefs, their intention to use IT, and their actual usage behavior. Taken together, those studies mainly confirm that CA positively influences perceived ease of use, perceived usefulness, perceived enjoyment, user trust, and user satisfaction. Though, they leave unanswered whether CA has a stronger influence on perceived ease of use or on perceived usefulness.

Jia, Hartke-Jia, and Pearson (2007), Wakefield and Whitten (2006) suggest that the technology 'purpose' has implications for the CA influence on perceived usefulness, perceived ease of use, and perceived enjoyment. Wakefield and Whitten (2006) compare CA in utilitarian and hedonic contexts[5]. They point out, that in hedonic contexts, CA has a stronger influence on perceived enjoyment than on perceived usefulness and that the result is the other way round in utilitarian usage contexts. Finally, Chandra, Srivastava, and Theng (2009), Jia, Hartke-Jia, and Pearson (2007), Saade and Bahli (2005), Wakefield and Whitten (2006) determine a positive CA influence on the intention to use IT and the actual usage behavior.

RESEARCH MODEL

Research Framework

In order to understand the formation of user beliefs and intentions to use new media in social contexts, we develop a research model based on Agarwal and Karahanna (2000). We propose three main adjustments. (1) We differentiate between CA and perceived enjoyment , (2) We incorporate perceived (IT and media) quality as determining CA, perceived usefulness, and

5 For distinguishing utilitarian and hedonic IT usage contexts, see also van der Heijden (2004).

perceived enjoyment, (3) We add perceived price level as direct antecedent of intention to use. The adjustments are explained below.

Ad 1) We differentiate between CA and perceived enjoyment when using new media in social contexts. As stated above, in this paper we understand new media usage in social contexts primarily to serve fulfilling users' amusement needs (Vorderer, Klimmt & Ritterfeld 2004). New media are mainly 'used for fun', which, on the one hand, implicitly involves usefulness and, on the other hands, stresses the importance of enjoyment. We assume that the state of CA encompasses temporal dissociation, focused immersion, control, and curiosity as proposed and validated by Agarwal and Karahanna (2000). However, we differ from Agarwal and Karahanna (2000) who implicitly integrate perceived enjoyment in the state of CA measured based on Davis, Bagozzi, and Warshaw (1992). We rather follow Wakefield and Whitten (2006), who state that "combining enjoyment in the CA scale masks the variance unique to this affective construct" (p. 294). Affective and cognitive components of attitude have distinct relationships with behavior (Breckler 1984; Millar & Tesser 1986; Schachter & Singer 1962). In contrast to Agarwal and Karahanna's cognitive CA dimensions control, curiosity, temporal dissociation, and focused immersion, perceived enjoyment represents an affective dimension (Wakefield & Whitten 2006). Hence, we *distinguish between CA and (heightened or perceived) enjoyment* and include perceived enjoyment as user belief in our research model for studying CA when using new media in social contexts. As a result, we suggest to study the influence of CA on three user beliefs: perceived usefulness, perceived ease of use, and perceived enjoyment. Since CA is conceptualized as intrinsic motivator leading to enjoyment or pleasure (Agarwal & Karahanna 2000), we assume that especially in social contexts, CA has a significant influence on perceived enjoyment which, in turn, plays a central role for the intention to use new media. At first glance,

the conceptualization of CA without the affective dimension of heightened enjoyment might be thought of as misleading since we particularly focus on social contexts and therefore stress the importance of affective components such as enjoyment. Nevertheless, by separating enjoyment from CA, we aim at emphasizing the affective component. We thus hope to gain a better understanding of role of perceived enjoyment for the formation of user beliefs and intentions to use new media in social settings.

Ad 2) We incorporate perceived (IT and media) quality determining CA, perceived usefulness, and perceived enjoyment. The consideration of IT or media specific factors is of value for understanding the formation of user beliefs (see also Lederer, Maupin, Sena & Zhuang 2000; Lu, Yu, Liu & Yao 2003). We model the factors as quality dimensions and incorporate perceived quality with affective and cognitive components as additional variable. The construct perceived quality encompasses four dimensions, which are perceived content quality, perceived system quality, perceived interactivity, and perceived security. The relevance of the four dimensions shall be briefly explained:

- *Content quality*, respectively information quality, refers to the desired characteristics of the information product such as accuracy, meaningfulness, and timeliness. DeLone and McLean (1992) identify content quality as an important predictor for successful IS building. Subsequently, Beyah, Xu, Woo, Mohan, and Straub (2003), Cheong and Park (2005), Lin and Lu (2000) notice the importance of perceived content quality for the formation of user beliefs and intentions to use IT, as content that is perceived as valuable and interesting, can stimulate the rising of curiosity and the loosing of track of time.
- *System quality* refers to IT attributes such as response time, system accessibility, and reliability. Davis (1993), Hong, Thong, Wong, and Tam (2002), Igbaria, Guimaraes, and

Davis (1995), Lin and Lu (2000), and Shin (2009b) point to the importance of perceived system quality for the formation of user beliefs. For example, frequent interruptions or delays in response likely let users perceive a low level of overall quality, and hence users will be less likely to experience a state of CA. Long waiting periods will interfere with the emergence of focused immersion and temporal dissociation.

- IT usage is accompanied by users' concerns regarding their perceived *security*: For instance, Salisbury, Pearson, Pearson, and Miller (2001) show that perceived security influences users' intention to purchase online. Flavian and Guinaliu (2006) add that perceived security predominantly influences users' trust in IT, which in turn affects effective behavior. In the context of new media, Shin (2009b) highlights the direct effect of users' perceived security on their usage intention. Perceiving the use of new media as being secure and safe contributes to the state of CA and overall perceived quality. Hence we include perceived security as dimension of perceived quality. Alternatively, one may consider perceived security directly influencing the usage intention (Salisbury, Pearson, Pearson & Miller 2001; Yenisey, Ozok & Salvendy 2005).
- Perceived *interactivity* refers to a person's perception of an object's "potential ability to let a user exert an influence on the content and/or the form of the mediated communication" (Jensen 1998, p. 201). Within IS research, Chung and Zhao (2004), Jee and Lee (2002), McMillan and Hwang (2002), McMillan, Hwang, and Lee (2004), and Wu (2005) investigate the role of perceived interactivity in relation to users' attitudes towards websites and corresponding purchase decisions. As most new media offer interactivity features such as active control functions, perceived interactivity is expected to contribute to perceived quality as CA determinant.

Overall, the construct perceived quality captures utilitarian and hedonic (or pleasure-oriented) aspects, "the fun part", of using new media.

We assume that perceived quality constitutes an important antecedent of CA, of perceived usefulness, and of perceived enjoyment. In contrast to earlier research incorporating IT or media specific factors (e.g., Hong, Thong, Wong, & Tam 2002; Igbaria, Guimaraes & Davis 1995; Lin & Lu 2000; Zhang, Li & Sun 2006), we do not assume that perceived quality has a (significant) influence on perceived ease of use. Merely, the dimension of perceived interactivity could slightly influence the degree to which a person believes that using a particular system would be free of effort (Davis 1989).

Ad 3) We add perceived price level as direct antecedent of intention to use. Research within the IS and marketing field (Lichtenstein, Ridgway & Netemeyer 1993; Kim, Chan & Gupta 2007; Mallat 2007) has shown that the perceived price level, referring to the price that individuals are willing to pay for a service, is one of the most critical determinants for the intention to use. In contrast to organizational media usage, usually social media usage requires users being willing to pay – directly for usage or access or indirectly via advertisement based business models (see also Pavlou & Fygenson 2006). Therefore we think that new media usage is closely related with buying intentions (e.g., buying Internet access, eBooks, online newspaper subscription, etc.). Since we develop a research model for social contexts, we incorporate the perceived price level as variable influencing the intention to use.

Figure 2 depicts our resulting research model. It adjusts the model introduced by Agarwal and Karahanna (2000) to new media usage in social contexts, mainly by (1) differentiating between CA and perceived enjoyment; (2) incorporating dimensions of perceived quality as antecedents

of CA, perceived usefulness, and perceived enjoyment; and (3) considering a direct effect of perceived price level on intention to use.

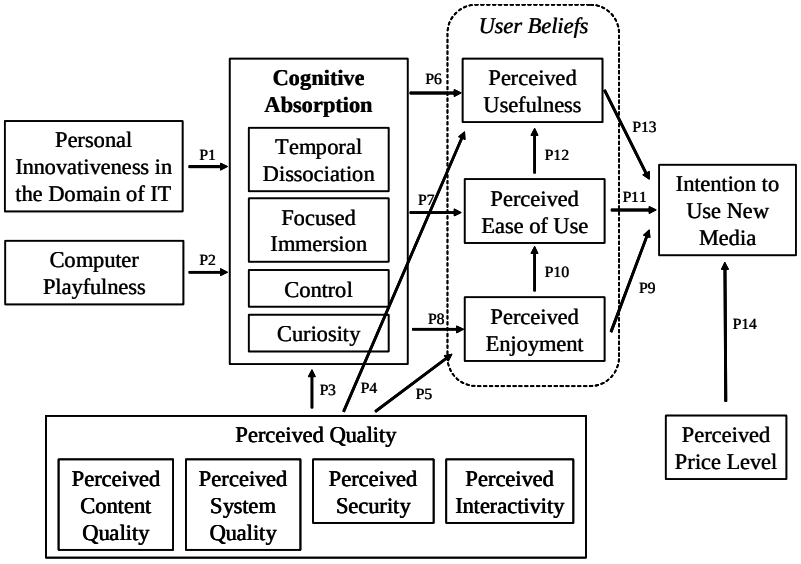

Figure 2: Proposed Research Model

Model Propositions

As this paper does not include any data collection or analysis, but rather provides a research model for examining CA in the context of new media, we refer to propositions rather than hypotheses. Propositions differ from hypotheses in that they "... involve concepts whereas hypotheses require measures" (Whetten 1989, p. 491).

Table 1 provides an overview of the propositions included in our research model. Many follow the wording of prior CA research. However, as we (1) model perceived quality as separate construct and consequently model CA as construct with three instead of two antecedents, (2) conceptualize CA without the dimension of enjoyment, and (3) add perceived price level as variable influencing intention to use, we would like to underline that all propositions including CA should have a slightly different connotation that the respective propositions in Agarwal and Karahanna (2000).

Propositions	
P1	Personal innovativeness in the domain of IT positively influences CA.
P2	Computer playfulness positively influences CA.
P3	Perceived quality positively influences CA.
P4	Perceived quality positively influences perceived usefulness.
P5	Perceived quality positively influences perceived enjoyment.
P6	CA positively influences perceived usefulness.
P7	CA positively influences perceived ease of use.
P8	CA positively influences perceived enjoyment.
P9	Perceived enjoyment positively influences the intention to use new media.
P10	Perceived enjoyment positively influences perceived ease of use.
P11	Perceived ease of use positively influences the intention to use new media.
P12	Perceived ease of use positively influences perceived usefulness.
P13	Perceived usefulness positively influences the intention to use new media.
P14	The perceived price level negatively influences the intention to use new media.

Table 1: Research Propositions

Below we explain how we derive the fourteen propositions included in our research model:

Personal innovativeness in the domain of IT is defined as "the willingness of an individual to try out a new information technology independent of the communicated experiences of others" (Agarwal & Prasad 1996, p. 206). Agarwal and Karahanna (2000) and Thomas (2006) indicate that at least some CA dimensions might be influenced by personal innovativeness in the domain of IT. Since most new media represent relatively new IT (e.g., Xiao, Du, Zhang, Hu & Guizani 2007), we expect that a person who is more likely to experiment with a new IT, will tend to interact more spontaneously and curiously, and will tend to experience total engagement while her sense of time diminishes. Hence, we propose:

P1. Personal innovativeness in the domain of IT positively influences CA.

Computer playfulness, defined as "an individual's tendency to interact spontaneously, inventively, and imaginatively with new software" (Webster & Martocchio 1992, p. 202) has been shown to be a significant predictor for the state of flow (Agarwal & Karahanna 2000). As CA is similar to flow, it is likely that computer playfulness also influences CA. Agarwal and

Karahanna (2000), Jia, Hartke-Jia, and Pearson (2007), and Leonhard and Riemenschneider (2008) consistently confirm this in the organizational context. We suppose that the predisposition to interact inventively with new software also has a positive influence on the state of CA when using new media in social contexts. Therefore, we propose:

P2. Computer playfulness positively influences CA.

Perceived quality consisting of several dimensions has been treated extensively in IS research. Many authors including Aladwani and Palvia (2002), Gemoets and Mahmood (1990), Kaplan, Krishnan, Padman, and Peters (1998), Kettinger and Lee (1994), King and Epstein (1983), Liu and Arnett (2000), Nelson (1996) refer to quality dimensions such as data, information, system, and service quality. They show that perceived quality influences affective and psychological states when interacting with IT. Modeling the states as CA and understanding perceived quality as a user's perception of the quality of an object, we assume that the 'better' the perceived quality, the more a person experiences the state of CA. This leads to:

P3. Perceived quality positively influences CA.

Various studies (e.g., Lin & Lu 2000; Shin 2009a & 2009b; Venkatesh 2000) have shown that quality as IT- and media-specific factor positively influences perceived usefulness. Hence, we propose:

P4. Perceived quality positively influences perceived usefulness.

According to Davis, Bagozzi, and Warshaw (1992), perceived enjoyment is important for the formation of the intention to use IT. "While usefulness will once again emerge as a major determinant of intentions to use a computer in the workplace, enjoyment will explain significant

variance in usage intentions beyond that accounted for by usefulness alone" (p. 1113). We capture perceived enjoyment as outcome of perceived quality, as we assume that the four quality dimensions are conducive to the user's perceived enjoyment when using new media. As a result, we propose:

P5. Perceived quality positively influences perceived enjoyment.

Agarwal and Karahanna (2000) characterize CA as intrinsic motivator leading to pleasure or enjoyment. Hence we assume that a person who is cognitively absorbed, experiences gratification and pleasure and therefore is likely to rationalize her behavior and attributes instrumental value to it. Hence, we propose:

P6. CA positively influences perceived usefulness.

Following Agarwal and Karahanna (2000), CA is proposed to positively influence perceived ease of use. Temporal dissociation contributes to perceived ease of use through conveying the impression that there is enough time to accomplish a task. Focused immersion and curiosity reduce the perceived cognitive burden associated with interacting with new media, thereby intensify the respective perceived ease of use. A sense of being in charge with the interaction (control) also contributes to the perceived ease of use by lowering the perceived difficulty in task performance (Agarwal & Karahanna 2000). As a result, the following proposition arises:

P7. CA positively influences perceived ease of use.

The deeper a person's CA, the more likely is the new media usage perceived as enjoyable. The influence of CA on perceived enjoyment is explained with cognitive dissonance, the uncomfortable state of mind caused by dissonant or non-fitting relations among cognitive

elements (Festinger 1962). During the state of CA, a person experiences gratification and pleasure. Wondering why she uses the system, she rationalizes that it must be either useful (see P6), or enjoyable, because she is spending time with it. As a result she attributes affective value to her behavior. Therefore, we propose:

P8. CA positively influences perceived enjoyment.

Davis, Bagozzi and Warshaw (1992), and van der Heijden (2004) indicate that perceived enjoyment serves as intrinsic motivator. Thereby it has a positive influence on the intention to use IT. Hence, we expect perceived enjoyment to also play the decisive role for the intention to use new media. This leads to:

P9. Perceived enjoyment positively influences the intention to use new media.

According to Venkatesh (1999 & 2000), Agarwal and Karahanna (2000), Yi and Hwang (2003), perceived enjoyment positively influences perceived ease of use, whereas Davis, Bagozzi, and Warshaw (1992), and van der Heijden (2004) indicate that the direction of influence may also be the other way around. Although both directions have been supported theoretically and empirically (Sun & Zhang 2006), we propose:

P10. Perceived enjoyment positively influences perceived ease of use.

For instance, Hong, Thong, Wong, and Tam (2002), Jackson, Chow, and Leitch (1997), Ong, Lai, and Wang (2004), Venkatesh (1999 & 2000), Wang, Wang, Lin, and Tang (2003) validate the positive direct influence of perceived ease of use on intention. Davis (1989) points to an indirect effect of perceived ease of use on intention to use – mediated by perceived usefulness. Similarly, Gefen and Straub (2000), and Subramanian (1994) question that perceived ease of use

always directly affects intention to use. Nevertheless, following the first group of authors mentioned above, we assume that a person is more likely use new media that she perceives as easy to use. Hence, we propose:

P11. Perceived ease of use positively influences the intention to use new media.

Agarwal and Prasad (1999), Davis (1989), Davis, Bagozzi, and Warshaw (1992), Gefen and Straub (2000), Hong, Thong, Wong, and Tam (2002), Venkatesh (2000), and Venkatesh and Davis (2000) indicate a positive relationship between perceived ease of use and perceived usefulness, meaning that the more a person believes that using a particular system is free of effort, the more she believes the system enhances her job performance. We propose:

P12. Perceived ease of use positively influences perceived usefulness.

According to previous TAM research (e.g., Adams, Nelson & Todd 1992; Agarwal & Prasad 1999; Davis, Bagozzi. & Warshaw 1989, 1992; Mathieson 1991; Venkatesh 1999; Venkatesh 2000; Venkatesh & Davis 2000), perceived usefulness influences the intention to use IT. Hence, we propose:

P13. Perceived usefulness positively influences the intention to use new media.

Following Pavlou and Fygenson (2006) and Wu and Wang (2005), the perceived price level is important to developing intention for service usage. Although not all media usage involves users direct willingness to pay, we capture the perceived price level as obstacle to the intention to use new media, in social contexts. Hence, we propose:

P14. The perceived price level negatively influences the intention to use new media.

Operationalization of Model Variables

All variables in our research model are latent[6]. They cannot be directly observed or measured, but they are inferred from one or more manifest variables (Diamantopoulos 1994). To accommodate the characteristics of those latent variables, we operationalize them via item-based scales to which we apply Likert scaling. Likert-scaling allows for assessing individual differences in user beliefs (e.g., Kline 2005). It presumes the existence of latent continuous variables whose value characterizes the respondents' beliefs and opinions (Clason & Dormody 1994).

Below we describe the item-based operationalization for each variable in the research model:

- To measure *personal innovativeness in the domain of IT*, we adapt the four-item scale presented by Agarwal and Prasad (1996). One of the four items assessing is reverse-coded (agreeing with this item suggests an opposite set of beliefs / feelings), which should prevent respondents from always choosing a particular response category without really attending to the item (Kline 2005).
- To measure *computer playfulness*, we follow Agarwal and Karahanna (2000) and use the seven-item scale developed and validated by Webster and Martocchio (1992).
- To measure *CA*, we use the scale developed and validated by Agarwal and Karahanna (2000), notwithstanding the dropping of the heightened enjoyment dimension. The scale consists of five items measuring temporal dissociation, five items measuring focused immersion, three items measuring control, and three items measuring curiosity. The items which capture focused immersion and control each include one reverse-scaled item.

6 Latent variables stand in contrast to manifest (observable or empirical) variables.

- To measure *perceived content quality*, *perceived system quality*, and *perceived security*, we adjust items developed and validated by Shin (2009a, 2009b) after some modifications from Cheong and Park (2005) concerning perceived content quality, and from Yenisey, Ozok, and Salvendy (2005) regarding perceived security. Measuring *perceived interactivity*, we combine three items worked-out by McMillan and Hwang (2002) by developing a measure for perceived interactivity of the World Wide Web (WWW), with three items used by Liu (2003) to measure the perceived interactivity of websites. Among the six items, three are reverse-scaled.
- To measure *perceived usefulness*, we adapt the four-item scale from Davis (1989), measuring the extent to which a person believes that new media are capable of being used advantageously and providing positive expected outcomes (Shin 2009a).
- To measure *perceived ease of use*, we build on Davis' (1989) and his four item scale (see also Agarwal & Karahanna 2000).
- To measure *perceived enjoyment*, we employ the four-item scale that Agarwal and Karahanna (2000) adapted from Davis, Bagozzi, and Warshaw (1992) and initially used to measure heightened enjoyment. The items encompass fun-seeking gratifications and enjoyment. One item is reverse scaled.
- To measure the *perceived price level*, we draw on the three-item scale developed by Liao and Cheung (2001).
- To measure the *intention to use new media*, again we go back to Agarwal and Karahanna (2000) and apply their scale adapted from Ajzen and Fishbein (1980).

PROPOSED RESEARCH DESIGN

Empirically estimating the proposed model requires focusing on a specific technology; we choose Internet Protocol Television (IPTV)[7] as rather specific example for new media. Below, we outline (1) our sampling of the respondents, (2) the IPTV-focused data collection and questionnaire design, and (3) Partial Least Squares (PLS) as selected data analysis method.

Sampling: We conduct a survey based on a web-based questionnaire (Andrews, Nonnecke & Preece 2003). Focusing on the intention to use IPTV, we should confine ourselves to survey only people with IPTV experience. To reach only people with IPTV experience, we post the survey link in various IPTV-related chats and discussion boards on the Internet. However, as we still cast doubt on reaching only (current and former) IPTV users, we also include a filter question in the questionnaire outlined below.

Deploying a web-based questionnaire and locating it on the Internet basically prevents random sampling. Therefore we need to build our model estimation on nonrandom and probabilistic sampling (Andrews, Nonnecke & Preece 2003). The required minimum sample size follows the data analysis method. We apply PLS for data analysis. With PLS, the required minimal sample size is at least ten times the number of items in the most complex construct (Gefen, Straub & Boudreau 2000). In the proposed research model, CA represents the most complex construct with 16 items; this then leads to a minimum sample size of 160.

Data Collection / Questionnaire Design: Our web-based questionnaire to collect the data needed for the model estimation contains three sections. In the introduction, we instruct participants that they should respond to the survey as candidly as possible and that there is no right or wrong answer. We try to convey that the survey is designed to gain knowledge of user perceptions

7 The delivery of television (TV) services via Internet protocol (IP) networks.

about using new media; namely IPTV. A filter question ensures respondents' prior experience with IPTV. In the second section, we aim at capturing the respondents' traits of personal innovativeness in the domain of IT and computer playfulness, as well as the state of CA while using IPTV. We also collect data regarding the perceived quality, perceived ease of use, perceived usefulness, perceived enjoyment, and perceived price level of IPTV usage as well as the intention to use IPTV. The respective IPTV-related scale items for all variables are shown in Appendix B. Items are grouped in blocs as they are assumed to describe the constructs. In the third section of the questionnaire, we ascertain socio-demographic data and close with the offer to participate in a lottery draw.

Model Estimation: We estimate the proposed research model with *Structural Equation Modeling (SEM),* which is applicable to both confirmatory and exploratory modeling, respectively theory testing and development (Anderson & Gerbing 1988). The latter suits the early stage of our research. SEM enables us to examine our exogenous and endogenous latent variables[8] and lets us model the multiple relationships among multiple constructs (Chin 1998a; Gefen, Straub & Boudreau 2000).

As specific SEM technique, we choose *PLS*. PLS is preferred over covariance-based SEM tools like LISREL when the proposed relationships and interdependencies are causal, but the underlying theory has not been well developed (Anderson & Gerbing 1988). As outlined above, the theoretical grounding of our model and the propositions stem from different disciplines or at least different application contexts, barely developed in the context of new media in social contexts. Also, in contrast to regression based techniques, PLS does not require error free measurement (Chin, Marcolin & Newsted 1996). Again, this suits the early stage of our model

8 *Exogenous latent variables* constitute variables which are not explained by the postulated model (i.e., act always as independent variables), while *endogenous latent variables* are explained by the relationships contained in the model (Diamantopoulos 1994).

development and the challenge to sample respondents with sufficient IT, here IPTV, usage experience. Our research model contains reflective[9] and formative[10] indicators (e.g., Jarvis, Mackenzie & Podsakoff 2003). For instance, CA is modeled as reflective construct. Perceived quality has formative indicators, whereas the four dimensions of perceived quality have reflective indicators. Different from covariance-based SEM techniques, PLS allows modeling both, reflective and formative, types of indicators (Chin 1998a; Fornell & Bookstein 1982). As PLS does not involve any assumption about the population or scale of measurement (Fornell & Bookstein 1982), it allows for minimized sample demands and is quite robust with regard to misspecification of the model (Gefen, Straub & Boudreau 2000).

Using PLS, we firstly examine the psychometric properties of the applied measures. Thereby we have to pay attention to the distinction between the reflective or formative indicators (Diamantopoulos & Winklhofer 2001; Jarvis, Mackenzie & Podsakoff 2003). We assess the reflective constructs based on validity and reliability and the formative relationships based on weights and significance. To rule out multi-collinearity, we take into account the variance inflation factor (VIF) on the indicator level (Diamantopoulos & Winklhofer 2001) and at the condition index (CI) on the construct level (Coltman, Devinney, Midgley & Venaik 2008). Secondly, after having examined the psychometric properties of the applied measures, we assess the model as a whole, pointing to potential causal dependencies between variables (Hulland 1999).

Secondly, to assess the structural model, we plan to analyze the local quality criteria for dependent variables with the coefficient of determination (R^2) for each dependent construct. To

9 Reflective indicators reflect the underlying latent variable and thereby depend on it. Thus, the correlation should be highly positive (Hulland 1999).

10 Formative indicators are not influenced by the latent variable, but influence the latent variable, so that they can have a positive, negative, or no correlation (Hulland 1999).

assess the proposed relationships within the research model, we first plan to test for the sign of the path and then to evaluate the significance of path coefficients (Chin 1998b), which can be interpreted as standardized beta weights in a regression analysis (Agarwal & Karahanna 2000).

DISCUSSION

We organize this section around four main discussion points,

(1) the relevance of our research – the relevance of studying the formation of user beliefs and intentions to use with regard to new media in social contexts,

(2) the building upon the model of Agarwal and Karahanna (2000) – the suitability of CA as construct influencing the formation of user beliefs and intentions to use IT developed and validated for organizational contexts being located at the core of studying the formation of user beliefs and intentions to use new media in social contexts,

(3) our adjustments to the model of Agarwal and Karahanna (2000) – the appropriateness of our modeling efforts, mainly in the form of adding three variables, i.e., (1) perceived enjoyment, (2) perceived quality (with sub-qualities) and (3) perceived price level, to transfer Agarwal and Karahanna (2000) to new media usage in social contexts, and

(4) our choice of PLS as SEM technique for model estimation.

Ad (1). One may ask whether any theoretical and practical contribution can be gained from studying the formation of user beliefs with regard to new media in social contexts. In organizational settings users are confronted with IT provided by their employers. In social settings of new media usage, however, the intention to buy typically precedes or at least complements the intention to use (Pavlou & Fygenson 2006). Due to the linkage of intention to buy with intention to use, one may argue that studying the formation of user beliefs in non-

organizational, social contexts is more or less an add-one to studying the formation of user intentions to buy, which – in turn – belongs to and has been extensively covered in the field of marketing, advertising, and IS. However, with new media devices having conquered most people's homes and travel luggage, with social media and user generated content becoming almost ubiquitous, and with most persons having to choose among the various social media available to them at any point in time, it seems studying what drives the intention to use new media in social contexts is important.

Ad (2). It needs to be discussed whether it is appropriate to build upon the model of Agarwal and Karahanna (2000) in our efforts to study the formation of user beliefs and intentions to use new media in social contexts. The literature shows that the work by Agarwal and Karahanna (2000) with CA at the core of investigating the formation of user beliefs and intentions to use in organizational contexts is basically without competition in IS research. Hence, we think that taking their work as a reference point for our model makes sense. Nevertheless, it requires reflecting upon the way one adjusts Agarwal and Karahanna's work with CA at the core to social contexts. For instance, Benbasat and Barki (2007) question the general suitability of utilitarian TAM constructs in social contexts. However, van der Heijden (2004) supports our approach of keeping perceived usefulness and perceived ease of use on the one hand and perceived enjoyment on the other hand together in the variable group of user beliefs when studying the formation of user beliefs and intentions to use in social contexts.

Ad (3). One may want to discuss *whether adding three variables,* i.e., (1) perceived enjoyment, (2) perceived quality (with sub-qualities) and (3) perceived price level to the model proposed by Agarwal and Karahanna (2000), *is appropriate and sufficient for conceptualizing the move from organizational to social contexts.*

- *Adding perceived enjoyment:* As a result of separating enjoyment from the CA construct, we incorporate perceived enjoyment as third user belief variable to perceived usefulness and perceived ease of use.[11] With incorporating perceived enjoyment as outcome of CA and antecedent of the intention to use, we underline the joy aspect of using new media in social contexts compared to usefulness and ease of use dominating organizational (utilitarian) environments (see also van der Heijden 2004).

  From a model design perspective, we drop (heightened) enjoyment from the CA construct. In contrast to the other CA dimensions in Agarwal and Karahanna (2000), namely control, curiosity, temporal dissociation, and focused immersion, (heightened) enjoyment represents an affective rather than a cognitive dimension. To us, perceived enjoyment as affective component of beliefs on the one hand and control, curiosity, temporal dissociation, and focused immersion as cognitive components of beliefs on the other hand, have distinct relationships with behavior.

  At first glance, conceptualizing CA without enjoyment might be thought of as misleading as we focus on social contexts and therefore aim at stressing the importance of pleasurable aspects. However, we follow Wakefield and Whitten (2006) by modeling enjoyment as separate variable. Thereby, we aim at emphasizing enjoyment and hope to gain a better understanding of its role in the formation of user beliefs and intentions to use new media in social settings.

- *Adding perceived quality:* We incorporate media specific factors in terms of quality (i.e., content quality, system quality, security, and interactivity). We expect perceived quality with its affective and cognitive components to constitute a crucial antecedent of CA and

11 Benbasat and Barki (2007) suggest to go even further and disregard the utilitarian constructs perceived usefulness and perceived ease of use, or even the overall TAM approach, when modeling user intentions in social contexts.

user beliefs in social settings, where the using intentions are closely linked to buying intentions. In prior IS research (e.g., Davis 1993, Lederer, Maupin, Sena & Zhuang 2000; Lu, Yu, Liu & Yao 2003; Zhang, Li & Sun 2006), the consideration of such IT- and media-specific factors has proven beneficial in understanding the formation of user beliefs and intentions to use. However, media-specific factors as model constructs are not 'formed in the user himself'. Clearly, media-specific quality and the respective dimensions are externally driven. To allow keeping users as subject of analysis, we do not incorporate the quality of factors directly, but the perceived quality of factors, which is 'formed in the user himself'. Thus, the measurement of the perceived quality resembles the measurement of the other variables. Obviously quality differences based on the type and provider of any specific new media application should be explicitly taken into account and possibly controlled for.

- *Adding perceived price level:* As to our understanding, in social settings of new media usage, the intention to buy or pay for access to new media typically precedes or at least complements the intention to use (Pavlou & Fygenson 2006). We therefore stress the indispensible link between intention to buy and intention to use by adding the perceived price level.However, one may question the perceived price level variable in two ways: Firstly, the externally set sales price has to be modeled as perceived price level, i.e., a variable 'formed in the user himself', in order to allow for keeping users as unit of analysis. Prior price research (e.g., Lichtenstein, Ridgway & Netemeyer 1993; Kim, Chan & Gupta 2007; Mallat 2007) has shown that in interviews and questionnaires users consistently ask for lower prices or judge existing prices as high. If one cannot control for distorted user assessments regarding the perceived price level, the model estimation suffers and shows

results that overestimate the perceived price level. The overestimation may go so far as to finding all other variables insignificant.

Clearly, since CA has been re-conceptualized and perceived quality has been newly introduced as multi-dimensional constructs in our research model, one may not disregard the need to validate the psychometric properties of the constructs.

Other indicators such as social influences, user self-efficacy, training and experience, support from others, or other system attributes which are neglected in our model, may also influence the formation of user beliefs and intentions to use new media in social contexts. Especially social influence has recently gained attention with the rise of social networks and communities. Not only Hsu and Lu (2004) and Yu, Yao, and Yu (2005) found it beneficial to understand new media adoption in social contexts.

One may argue that separating perceived enjoyment from the CA construct, i.e., changing the conceptualization of CA compared to Agarwal and Karahanna (2000), ineluctably shifts the understanding of the remaining variables and the propositions linking them and hence also the statistical analysis. However, whereas this criticism cannot be ignored, it is immanent to all model extensions and transfers to changed research settings.

Ad (4). At last, one may want to discuss the choice of PLS as SEM technique for estimating our model. Whereas we still consider the PLS approach the most suitable and the most convenient data technique, we may need additional procedures to obtain estimates of standard errors of the parameter estimates. Upfront model simulations confirm Anderson and Gerbing (1988) that PLS parameter estimates are not as efficient as full-information estimates. We also understand that under the conditions of consistency (sample size becomes large) and consistency at large (number of indicators per latent variable becomes large), PLS estimation tends toward the true population parameter (Chin, Marcolin & Newsted 1996). However, our empirical model estimation is not likely to fulfill those conditions. At least from our upfront

simulation of the model estimation, we see a risk that PLS tends to underestimate the correlations between latent variables and to overestimate the correlations of the observed measures with their respective latent variables. Based on the PLS approach, our results necessarily lacks an overall test of model fit (Chin 1998a). While such model fit does not seem required for the purpose of our analysis, it would certainly enrich the picture gained from our research. Furthermore, it would allow the model to be deployed more easily in additional model validation efforts. Thus, a test of model fit may lead to more frequent use of the model for upcoming research on CA and the formation of user beliefs and intentions to use in the ever growing context of using new media in social contexts.

RESEARCH CONTRIBUTION AND FUTURE RESEARCH

In this paper, we have proposed a research model for studying the formation of user beliefs and intention to use new media in social contexts that incorporates the CA construct. Our research model builds on and adjusts Agarwal and Karahanna (2000) with the objective to gain a better understanding of user reactions to new media in social contexts.

Whereas this work is still in its early stages, it provides ground to build on the extensively studied importance of intrinsically motivating states in technology acceptance research (e.g., Davis, Bagozzi & Warshaw 1992; Venkatesh 1999; Venkatesh 2000; Yi & Hwang 2003). It offers a contribution to theory development on one context-specific topic, namely, as stated repeatedly, the formation of user beliefs and intentions to use new media in social contexts. Considering four elements of theory-development, the What, the How, the Why, and the Who / Where / When (Whetten 1989), we explain and discuss which variables ('what') should be considered and 'how' they are related. We address the 'why' by explaining the underlying dynamics that justify the selection of variables and our propositions. However, we disregard the Who / Where / When, i.e., the conditions that place limitations on the propositions. For instance,

we neglect whether theoretical influences embedded in our model vary over time. Hence future research needs expand this work taking into account the Who / Where / When (Whetten 1989). However, the immediate next research step will have to be collecting the data and pursuing the empirical model estimation and validation. To the purpose of a rather generally valid model assessment and positioning, empirical model validations should be organized around the usage of different media in social context, e.g., after IPTV also Mobile TV, eBooks, or multi-player online games. Further, future research should consider investigating the model fit in order to better integrate the proposed model into interdisciplinary research endeavors.

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APPENDIX A – SELECTED EMPIRICAL RESEARCH ON CA

Author(s), Journal (Year)	Focus (Technology)	CA Dimensions	Direct CA Determinants	Direct CA Outcomes
Agarwal, Sambamurthy, Stair AoM Proceedings (1997)	IT adoption, software usage (Windows 95, Lotus 1-2-3)	Flow Computer playfulness Perceived ease of use	Personal innovativeness in the domain of IT ☒ Self-efficacy ☑	Perceived usefulness ☑
Agarwal, Karahanna, MISQ (2000)	Beliefs about IT usage (WWW)	Temporal dissociation Focused immersion Heightened enjoyment Control Curiosity	Computer playfulness ☑ Personal innovativeness in the domain of IT ☑	Perceived ease of use ☑ Perceived usefulness ☑
Wright, Granger, IAIM Proceedings (2001)	Using the web as strategic resource (WWW)	Temporal dissociation Focused immersion Heightened enjoyment Control Curiosity		Perceived ease of use ⊘
Leong, Ho, Zhang, World Conf. on E-Learning in Corporate Government, Healthcare, and Higher Education Proceedings (2005)	Intention to use online learning environments (Internet-based learning systems)	Temporal dissociation Focused immersion Heightened enjoyment Control Curiosity	Social presence (?)	Satisfaction (?)
Saade, Bahli, Information & Management (2005)	Intention to use online learning systems (Internet-based learning systems)	Temporal dissociation Focused immersion Heightened enjoyment		Intention to use ☑ Perceived ease of use ☑ Perceived usefulness ☑
Shang, Chen, Shen, Information & Management (2005)	Online shopping beliefs and behavior (WWW)	Temporal dissociation Focused immersion Heightened enjoyment Control Curiosity		Actual behavior ☒ Perceived ease of use ☑ Perceived usefulness ☑
Suki, Ramayah, Suki, Direct Marketing: An Int'l Journal (2008)	Internet shopping acceptance (WWW)	Temporal dissociation Focused immersion Heightened enjoyment Control Curiosity		Actual behavior ☒ Perceived ease of use ☑ Perceived usefulness ☑

Thomas, AMCIS (2006)	Antecedents and effects of CA (Microsoft Access)	Temporal dissociation Focused immersion Heightened enjoyment Control Curiosity	Computer playfulness ⦸ Normative influence ⦸ Personal innovativeness in the domain of IT ⦸	Perceived ease of use ⦸ Perceived usefulness ⦸
Wakefield, Whitten, EJIS (2006)	Hedonic and utilitarian mobile device usage (Blackberry PDA)	Temporal dissociation Focused immersion Control Curiosity		Hedonic context: Intention to use ☑ Perceived enjoyment ☑ Perceived usefulness ☒ Functional context: Intention ☑ Perceived enjoyment ☑ Perceived usefulness ☑
Zhang, Li, Sun, HICSS (2006)	Extending TAM with intrinsic motivation variables (WWW)	Temporal dissociation Focused immersion Heightened enjoyment Control Curiosity	Perceived affective quality ☑	Perceived ease of use ☑ Perceived usefulness ☑
Jia, Hartke-Jia, Pearson, ICIS (2007)	Antecedents of problematic IT usage (www)	Temporal dissociation Focused immersion Heightened enjoyment Control Curiosity	Computer playfulness ☑ Personal innovativeness in the domain of IT ☑	Actual usage ☑ Problematic usage ☑ Social/Leisure use ☑ Study/Work use ☒
Leonhard, Riemen-schneider, Electronic Markets (2008)	Factors influencing the individual impact of the web (WWW)	Temporal dissociation Focused immersion Heightened enjoyment Control Curiosity	Computer playfulness ☑ Personal innovativeness in the domain of IT ☒	Usability ⦸
Chandra, Srivastava, Theng, PACIS (2009)	Virtual world usage (Virtual worlds)	Temporal dissociation Focused immersion Heightened enjoyment Control Curiosity	Computer playfulness ☑ Familiarity ☒ Perceived compatibility ☑ Personal innovativeness in the domain of IT ☒	Intention to use ☑ User trust ☑
Lin, Behaviour and Information Technology (2009)	Intention to use virtual communities (Virtual community website)	Temporal dissociation Focused immersion Heightened enjoyment Control Curiosity		Intention to use ☒ Perceived ease of use ☑ Perceived usefulness ☑
Roca, Chiu, Martinez, Int'l Journal of Human Computer Studies (2009)	E-Learning Continuance Intention (E-learning system)	Temporal dissociation Focused immersion Heightened enjoyment Control Curiosity	Confirmation ☑	Perceived ease of use ☑ Perceived usefulness ☑ Satisfaction ☑

Symbols: ☑ confirmed, ☒ rejected, ⦸ inconclusive/partially supporting, (?) not tested yet

APPENDIX B – OPERATIONALIZATION OF VARIABLES

Construct	Personal Innovativeness in the Domain of IT (PIIT)
Source	Agarwal and Prasad (1996)
Specification	Reflective
Items	
PIIT-1	If I heard about a new IT, I would look for ways to experiment with it
PIIT-2	In general, I am hesitant to try out new IT (reverse-scaled)
PIIT-3	Among my peers, I am usually the first to try out new IT
PIIT-4	I like to experiment with new IT

Construct	Computer Playfulness (CPS)
Source	Agarwal and Karahanna (2000), adapted from Webster and Martocchio (1992)
Specification	Reflective
Items	
CPS-1	When using IPTV services I am spontaneous
CPS-2	When using IPTV services I am imaginative
CPS-3	When using IPTV services I am flexible
CPS-4	When using IPTV services I am creative
CPS-5	When using IPTV services I am playful
CPS-6	When using IPTV services I am original
CPS-7	When using IPTV services I am inventive

Construct	Cognitive Absorption (CA)
Source	Agarwal and Karahanna (2000)
Specification	Reflective
	Multidimensional, 4 Dimensions
Dimension	Temporal Dissociation (TD)
Items	
CA/TD-1	Time appears to go by very quickly when I am using IPTV services
CA/TD-2	Sometimes I lose track of time when I am using IPTV services
CA/TD-3	Time flies when I am using IPTV services
CA/TD-4	Most times when I get on to use IPTV services, I end up spending more time that I had planned
CA/TD-5	I often spend more time using IPTV services than I had intended
Dimension	Focused Immersion (FI)
Items	
CA/FI-1	While using IPTV services, I am able to block out most other distractions
CA/FI-2	While using IPTV services, I am absorbed in what I am doing
CA/FI-3	While using IPTV services, I am immersed in the action I am performing
CA/FI-4	While using IPTV services, I get distracted by other attentions very easily*
CA/FI-5	While using IPTV services, my attention does not get diverted very easily
Dimension	Control (CO)
Items	
CA/CO-1	When using IPTV services I feel in control
CA/CO-2	I feel that I have no control over my interaction with IPTV services*
CA/CO-3	IPTV services allow me to control my interaction with the IT
Dimension	Curiosity (CU)
Items	
CA/CU-1	Using IPTV services excites my curiosity
CA/CU-2	Interacting with IPTV services makes me curious.
CA/CU-3	Using IPTV services arouses my imagination

Construct	Perceived Quality (PQ)
Source	Own operationalization, see sources of particular dimensions
Specification	Formative
	Multidimensional, 4 Dimensions
Dimension	Perceived Content Quality (PCQ)
Source	Shin (2009a, 2009b), adapted from Cheong and Park (2005)
Items	
PQ/PCQ-1	IPTV provides various information and services
PQ/PCQ-2	The services and information I can get from IPTV is valuable
PQ/PCQ-3	IPTV provides the information and services that I need
Dimension	Perceived System Quality (PSQ)
Source	Shin (2009a, 2009b)
Items	
PQ/PSQ-1	IPTV provides various information and services
PQ/PSQ-2	The speed of IPTV is fast
PQ/PSQ-3	IPTV is secure to use
Dimension	Perceived Security (PS)
Source	Shin (2009a, 2009b), adapted from Yenisey, Ozok, and Salvendy (2005)
Items	
PQ/PS-1	In general, I feel secure in using IPTV systems
PQ/PS-2	I feel safe in transaction, downloading contents, and accessing sites via IPTV
PQ/PS-3	IPTV is well built against security-related concerns such as hacking, unauthorized uses, theft of data, interception of transmission, and virus
Dimension	Perceived Interactivity (PI)
Source	[a]Liu (2003), [b]McMillan and Hwang (2002)
Items	
PQ/PI-1	The IPTV service was very slow in responding to my requests[a] (reverse scaled)
PQ/PI-2	IPTV operates at high speed[b]
PQ/PI-3	While I was using IPTV service, I could choose freely what I wanted to see[a]
PQ/PI-4	It is easy to find my way through the IPTV service[b]
PQ/PI-5	IPTV enables two-way communication[b]
PQ/PI-6	It is difficult to offer feedback to the IPTV service [a] (reverse scaled)

Construct	Perceived Enjoyment (PE)
Source	Agarwal and Karahanna (2000), adapted from Davis, Bagozzi, and Warshaw (1992)
Specification	Reflective
Items	
PE-1	I have fun using IPTV services
PE-2	Using IPTV services provides me with a lot of enjoyment
PE-3	I enjoy using IPTV services
PE-4	Using IPTV services bores me (reverse scaled)

Construct	Perceived Ease of Use (PEU)
Source	Agarwal and Karahanna (2000), adapted from Davis (1989)
Specification	Reflective
Items	
PEU-1	Learning to operate IPTV services is easy for me
PEU-2	I find it easy to get IPTV services to do what I want them to do
PEU-3	It is easy for me to become skillful at using IPTV services
PEU-4	I find IPTV services easy to use

Construct	Perceived Usefulness (PU)
Source	Shin (2009a), adapted from Davis (1989)
Specification	Reflective
Items	
PU-1	Using IPTV service is very useful to my life in general
PU-2	Using IPTV is helpful to improve my performance in general
PU-3	Using IPTV is helpful to enhance effectiveness of my life in general
PU-4	Using IPTV provides very useful service and information to me

Construct	Perceived Price Level (PPL)
Source	Liao and Cheung (2001)
Specification	Reflective
Items	
PPL-1	Using IPTV is expensive in overall
PPL-2	The price level of using IPTV is a burden to me
PPL-3	The price level of using special service or information through IPTV is expensive to use

Construct	Intention to Use New Media (IU)
Source	Agarwal and Karahanna (2000), adapted from Ajzen and Fishbein (1980)
Specification	Reflective
Items	
IU-1	I plan to use IPTV services in the future
IU-2	I intend to continue using IPTV services in the future
IU-3	I expect my use of IPTV services to continue in the future