

The Effect of Technological and Psychological Factors on Users' Intentions to Continually Read e-Books

Chien-Wen Chen*

Department of Business Administration, Feng Chia University, Taiwan

Abstract

Due to the growth in both the number and use of e-books, the question arises as to which factors influence readers continually engage in e-book reading. This study uses innovation diffusion theory and uses and gratifications theory as theoretical bases from which to predict factors that may influence e-book readers to engage in repeated readings over time. Readers with experience reading e-books were recruited as the research participants. The results show that compatibility and entertainment are two factors salient to readers' attitude toward e-book reading, which in turn affects their intentions to read e-books continually, whereas convenience, social interaction, and price consciousness have no impact on such an attitude. This study helps e-book retailers improve reader retention regarding both technological and psychological considerations.

Key words: e-book reading; continuance intention; innovation and diffusion theory; uses and gratifications theory

JEL classification: M10; M31

1. Introduction

Electronic books (e-books) provide a novel way for people to read. The massive quantity, diversity, and accessibility of e-books have contributed to their attractiveness and growing popularity. Baki (2010) defined e-books as "books, prepared to be read via computers or e-book readers that have some additional features besides printed books such as visuals, sound effects and interactive links." Bosman (2012) reported that e-book sellers' revenues in 2011 were 2.07 billion USD and these revenues have grown dramatically up from 869 million USD in 2010. According to the Association of American Publishers (as cited in Indvik, 2010), e-book sales increased by almost 200% in 2010 when compared to 2009; in August, 2012, Amazon announced that sales of its Kindle e-books were outstripping sales of printed books (Malik, 2012). Due to the growth in both the number and use of e-books, the question arises as to which factors influence readers to continually

*Correspondence to: Department of Business Administration, Feng Chia University, No. 100 Wenhwa Rd., Seatwen, Taichung 40724, Taiwan, R.O.C. E-mail: chencw@fcu.edu.tw.

engage in e-book reading.

Studies on e-books can be summarized using three general focus areas: (1) user interface design of e-books (Wilson et al., 2002), (2) readers' intentions to read e-books (Lai and Chang, 2011; Cassidy et al., 2012; Aharony, 2014; Poon, 2014), and (3) readers' continuance intentions to read e-books (Shin, 2011). Although these studies have elucidated different facets of e-book advancement, several improvements are worth noting. First, previous studies have proven that the design features of e-books can be characterized as the major reason for readers to use an e-book (e.g., Clark et al., 2008; Gibson and Gibb, 2011), but they have not addressed any psychological factors that may affect e-book reading behavior. For instance, Lam et al. (2009) reported that the usability and usefulness of e-books are functions of readers' enjoyment and comfort, whereas Worlock (2009) stated that readers may be uncomfortable with the idea of e-book reading because of their unfamiliarity with a particular reading device. Thus, both psychological and technical factors have been suggested to be concurrent in studies on e-book adoption (Shin, 2011). Second, previous studies exploring readers' intentions to read e-books have paid minimal attention to continued e-book readings; instead, they have focused primarily on one-time adoption (e.g., Seet and Goh, 2012). However, continued e-book readings should generate higher revenues for e-book retailers than the one-time adoption of e-books does. Ascertaining why readers willingly read e-books over time is worthwhile, as suggested by the concept of consumer loyalty (Oliver, 1999). Third, Shin (2011) borrowed the concept of consumer satisfaction from expectancy-confirmation theory (Oliver, 1980) and defined gratification as a psychological affect related to and resulting from a cognitive appraisal of reading e-books, which in turn affects readers' intentions to read e-books continually. However, Oliver (1980) argued that satisfaction (i.e., gratification) is a transient experience-specific affect, whereas attitude is an enduring affect transcending all experiences. Satisfaction and attitudes must be distinguished conceptually, particularly when researching continuance behaviors. In addition, previous studies on continuance intention of e-book reading have seldom focused on the effect of price consciousness on such a repeated behavior. However, readers frequently seek inexpensive e-books to substitute relatively expensive physical books because of the concern about cost-effectiveness (Annand, 2008).

The current study extended related research by examining the simultaneous effects of technical and psychological factors on readers' continuance intentions to read e-books. We adopted innovation diffusion theory (IDT) and uses and gratifications theory (UGT) as the underlying theories of our study, coupled with the information systems continuance model (ISCM). IDT pertains to the adoption of technical aspects of an innovation (Rogers, 1983), such as in the context of reading e-books, whereas UGT describes the psychological responses people exhibit after using a medium to satisfy their needs (Rubin and Bantz, 1987). For example, commuters can pass time at bus stops by reading e-books for either utilitarian or hedonic needs. Consistent with the findings of Bhattacharjee (2001), the ISCM has been used to theorize the association between readers' enduring attitudes toward

e-book reading and their continuance intentions to read e-books. The proposed model is expected to contribute to relevant literature by offering theoretical contributions and managerial implications that can help both researchers and practitioners to understand more clearly how readers develop enduring attitudes toward e-book reading, and whether or not such attitudes affect readers' continuance intentions to read e-books. Specifically, the direct and moderating effects of price consciousness were also investigated. The findings of the current study explain why readers continually read e-books, and are thus beneficial to interested audiences.

This paper is organized as follows. The following section introduces the theoretical foundation of this study, followed by a discussion of the hypotheses in Section 3. The research method and data analysis are described in Section 4. Section 5 presents a discussion of the research findings, theoretical contributions, and managerial implications. Finally, the limitations of this study are discussed in Section 6.

2. Theoretical Background

2.1 Innovation Diffusion Theory

IDT explains how an innovation is disseminated through certain channels over time within a particular population. IDT is widely applied when investigating (1) the characteristics of different adopter segments regarding an innovation (Patsiotis et al., 2012); (2) how an innovation is communicated within peer-to-peer conversations (Zimmerman and Bar-Ilan, 2009); and (3) the technical characteristics that appeal to users when adopting an innovation (Thong, 1999). Based on the third research theme, this study uses IDT to identify the technical factors that affect readers' intentions to continually engage in innovative e-book reading behaviors.

Rogers (1983) proposed five technical characteristics of an innovation that affect a person's decision to adopt or reject the innovation: relative advantage, compatibility, complexity, observability, and trialability. We summarize these characteristics as follows:

1. Relative advantage is defined as the extent to which an innovation is perceived as better than the generation it supersedes. To gain a foothold within the competitive market, any innovation must be perceived as offering relative advantages over existing comparable products or services (Ruyter et al., 2001). For example, an airline offers online check-in service to passengers to reducing their waiting time in line at a counter; thus, such an airline is perceived by passengers to be more competitive than the airline that does not offer that service.
2. Compatibility is the degree to which an innovation is perceived as being consistent with existing ideas. An innovation that is more compatible with the current idea creates less uncertainty in potential adopters and fits more closely with their impressions of the idea that they have already adopted. Thus, the ability of a technological innovation to coexist with a previously introduced

technology increases the prospect of its adoption (Agarwal and Prasad, 1997).

3. Complexity is the degree to which an innovation is perceived as relatively difficult to comprehend and adopt. When a task of understanding an innovation becomes highly complex, people hesitate to adopt it because of their limited cognitive resources (Speier, 2003). Similarly, attention to complex innovations may become diluted because of people's limited attentional capabilities for effectively learning about innovations (Ansburg and Hill, 2003). Hence, complexity is detrimental to the adoption of an innovation.
4. Observability is the ease with which a particular innovation can be viewed by or communicated to other users. The easier it is for potential adopters to observe an innovation being adopted, the more likely they are to consider buying it. For example, potential adopters who do not own a smartphone can learn how adopters use smartphones in transit. This observability conveys the mobile experience of using smartphones to observers and increases their intention to buy a similar product if they need it. Therefore, the rate of an innovation being diffused should be affected, regardless of whether the results of that innovation can be observed (Moore and Benbasat, 1991).
5. Trialability pertains to the degree to which an innovation that can be tested and experienced under certain conditions facilitates its adoption. In considering the example of a software company announcing a newly innovated program with a free-trial version, potential users can obtain usage experience by using the trial version and decide whether or not to purchase the regular version. Gallaugher and Wang (1999) confirmed that trialability mitigates product uncertainty, particularly when a product or service is not physically demonstrated.

In contrast to physical books, e-books, because of their comparable advantages (e.g., search ability, printability, and portability) significantly extend the readability, portability, and accessibility of publications. Readers do not need to be concerned about the completeness of e-books because e-books are simply replicated from physical books that come up to compatibility. The manner of navigating through e-book pages is similar to that of physical books. Readers can intuitively use their mice or fingers to turn pages on computer monitors or tablets, reducing the complexity of e-book readings. Furthermore, reading e-books is prevalent and observable. Students can read e-books in libraries or read them at home. Commuters can read e-books on their way to work. These cases provide observability of e-book readings for potential readers. Specifically, many e-book sellers currently offer free-downloads or previews of e-books to readers to alleviate their content uncertainty. This increases the potential for trialability of e-books before subscriptions.

2.2 Uses and Gratifications Theory

Uses and gratifications theory purports to explain why people actively use a specific medium for the purpose of gratification (Herzog, 1944). Because users have the power to make decisions, the merits of UGT can be understood from the

perspective of users' needs for media selection. Katz et al. (1973) identified five needs as the facilitators of this selection, including cognitive needs, affective needs, integrative needs, social integrative needs, and tension release needs. Cognitive needs refer to the desires for acquiring information, knowledge, and understanding of a subject by using the chosen medium. Affective needs mean that people rely on the chosen medium to strengthen their affective elements of the evaluated subject, such as emotion, pleasure, and feeling. Integrative needs imply that users take advantages of the chosen medium to sustain credibility, confidence, stability, and status. Social integrative needs represent that users utilize the chosen medium to get into contact with other people, such as their families and friends. Regarding tension release needs, users apply the chosen medium to alleviate the harmful state of affairs (e.g., threat, thwarting, and deprivation). The current study asserts that readers who make decisions to read e-books believe that the chosen e-book not only satisfies their needs but enhances their knowledge, pleasure, confidence, sociability, and the quality of diversion; therefore, they create a sense of gratification.

2.3 Continuance Intention

Behavioral intention to use something initially is different from continuance intention to use something unceasingly (Karahanna et al., 1999). The former focuses on one-time behavior, whereas the latter centers on repeating behavior. The technology acceptance model (TAM) proposed by Davis et al. (1989) is an example of behavioral intention that addresses why people adopt an information system (IS) without having usage experience. The ISCM proposed by Bhattacharjee (2001), however, explains why people prefer continually reusing an IS after initial adoption. In the context of e-book reading as the focus of our research, continuance intention can be defined as readers' intentions to continue reading e-books at the post-acceptance stage.

Previous studies in various fields have discussed the importance of continuance intention. For example, Thong et al. (2006) applied the concept of continued IS usage behavior to identify the roles of post-adoption perceived ease-of-use and perceived enjoyment in using mobile services. In the software industry, Mellarkod et al. (2007) identified software developers' intentions to reuse software assets as a function of technological-level (infrastructure) and individual-level factors (experience and self-efficacy). Referring to e-commerce, McCoy et al. (2009) reported that consumers' intentions to repatronize a shopping web site depend on their familiarity with that web site. Lee et al. (2009) concluded that consumers' repurchase intention is moderated by their computer self-efficacy and their anxiety about computer usage. More specifically, continuance intention is a key to the success of businesses, because acquiring new customers may be five times as costly as keeping existing customers (Peters, 1988). Because e-book reading is a prevalent example of IS applications, the current study applied the concept of continuance intention using the ISCM. We believe that the success of an e-book is premature to be proclaimed if only the initial usage of that e-book occurs.

2.4 Price Consciousness

Price seems to be a double-edged sword. It sometimes acts as an inhibitor to warn consumers that the product involved is unworthy of purchase if it is not economically affordable, which is one of the reasons why consumers having price consciousness that they use price in its negative role to be decision making guidance (Lichtenstein et al., 1988). Price consciousness from this aspect is defined as the degree to which the consumer focuses exclusively on paying low prices (Lichtenstein et al., 1993). Grewal and Marmorstein (1994) confirmed that consumers' purchase decisions depend on the price of a product. The lower a product price is, the higher the possibility that it will be purchased by consumers. Thus, the product price should be kept as low as possible. However, price can otherwise act as a facilitator to inform consumers that the product is purchasable, even when the price of that product is not low. For example, Ba and Pavlou (2002) claimed that consumers prefer paying more for an expensive product than for an inexpensive product when the performance of the intended product is unknown to them. Therefore, unknowledgeable consumers see price as a substitution for product scrutiny. They form an illusion that high-priced products deservedly have a higher level of product quality than low-priced products do, which is an example of consumer willingness to pay a price premium (Rao and Bergen, 1992).

This paper argues that the quality of e-books is predictable, because readers can preview e-books before their actual subscriptions (i.e., trialability). Thus, price premium is less likely to occur in this instance. Furthermore, the costs of e-books in many aspects (e.g., printing fees, shipping cost, storage cost, etc.) should be considerably lower than those of physical books. The economic affordability of e-books influences readers' impressions that e-books ought to be cheap and leads readers to seek the lowest prices for subscriptions. Consequently, price consciousness provides an impetus for readers to make a tradeoff between the gains and the monetary sacrifices of e-book readings. Price consciousness is positive when perceptions of the gains are greater than the perceptions of the monetary sacrifices (Monroe and Krishnan, 1985). The presumption of price consciousness here does not indicate that all e-books are overcharged; however, they should be sold at prices lower than the physically comparable versions. If not, the advantages of e-books over physical ones become diluted.

3. Research Model and Hypotheses

3.1 The Effects of Technological Factors on Readers' Attitudes toward E-Book Reading

3.1.1 Relative Advantage

The term "relative advantage" is the result of a comparison between two or among many comparable subjects. Liao et al. (1999) reported that depositors possess higher attitudes toward online banking than those of offline banking, because the

former has relatively more convenience than the latter, such as balance inquiry, funds transfer, and payments. Regarding our research context, e-book readings can be compared with physical book readings, revealing that e-books have many advantages over physical books (e.g., portability, readability, and accessibility). Because of these advantages, readers no longer spend excessive time searching for desired books; thus, they can read high-quality texts presented in e-books and can also enjoy the mentioned advantages anytime and anywhere. Readers' positive attitudes toward e-book reading are thus engendered. We propose the following hypothesis:

- H1.** The relative advantages of e-books positively affect readers' attitudes toward e-book reading.

3.1.2 Compatibility

Although people generally rely on their adaptability to adapt to changes (Andresen, 2006), the progress of the adaptation is hindered when the adapted innovation is not compatible to its preceding generation. In our research context, e-book readings are backwardly compatible with physical book readings, because readers can perform the task of turning pages on devices in the same manner of turning pages in physical books. They can also make annotations in the e-books as frequently as they take notes in physical books. All of these compatibilities are prerequisite for readers forming positive attitudes toward e-book reading. Lin (2007) revealed that consumers' attitudes toward online shopping are significantly affected by the compatibility between online shopping and offline shopping. We propose the following hypothesis:

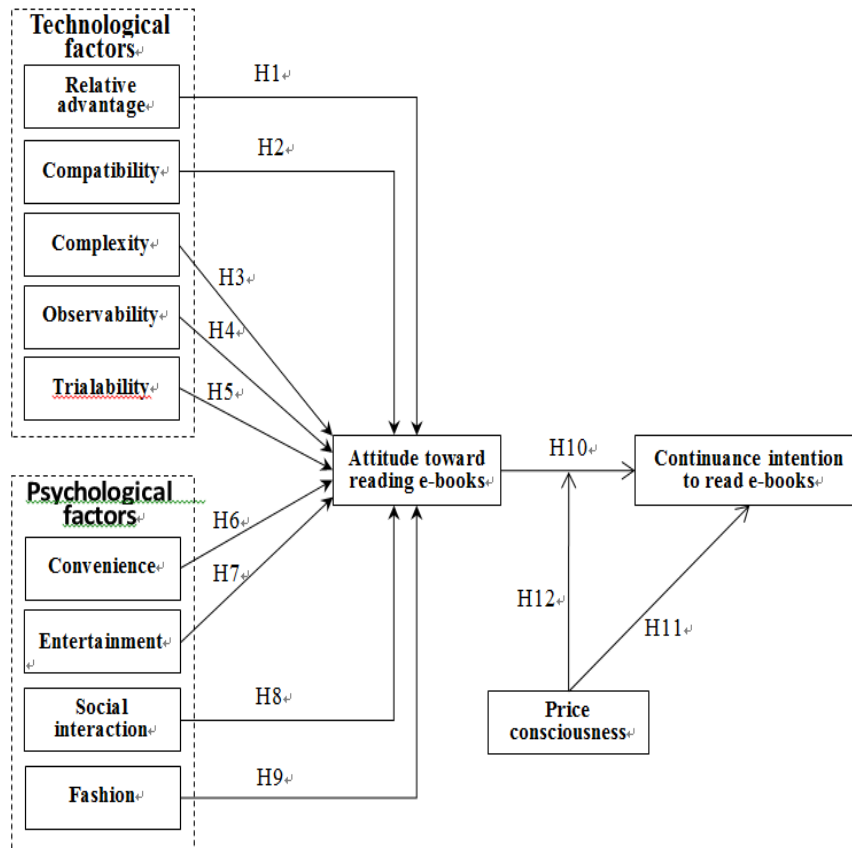
- H2.** The compatibility of e-books and physical books positively affects readers' attitudes toward e-book reading.

3.1.3 Complexity

Previous studies have determined the relationship between complexity and attitudes in different fields. Olney et al. (1991) argued that advertisements that are too lengthy increase the length of viewing time by consumers but decreases their attitudes toward the presented ad. Geissler et al. (2006) confirmed that consumers respond more favorably to homepages that are in a range of less complexity than to those that are in a more complex range. Obviously, the concept of complexity is opposite to the concept of ease-of-use (Moore and Benbasat, 1991) and the latter has been found to be a clear predictor of users' positive attitudes toward accepting a technology (Davis et al., 1989). Corresponding with this association, we argue that the e-book is an innovation that provides new functionality and a new interface for readers engaging in electronic readings. In addition, the degree to which e-books is perceived to be easier to use increases readers' attitudes toward e-book reading. We propose the following hypothesis:

- H3.** The perceived low complexity of e-books positively increases readers' attitudes toward e-book reading.

Figure 1. Research Model



3.1.4 Observability

Observability can be considered a means of uncertainty mitigation because of its information accessibility to unknown products. Previous studies in various fields have confirmed the relationship between observability and usage attitudes toward an innovation. For instance, Oh et al. (2003) reported that visibility and result demonstrability (i.e., observability) significantly affect users' attitudes toward using broadband internet service. Park and Chen (2007) argued that observability is one of the innovation characteristics affecting users' attitudes toward using a mobile phone. Consequently, e-book reading is now prevalent and observable in daily life. The higher the observability of e-book readings that are provided, the more likely it is that readers will form positive attitudes toward reading e-books. We propose the

following hypothesis:

- H4.** The perceived observability of e-books positively affects readers' attitudes toward e-book reading.

3.1.5 Trialability

Trialability helps when initially testing an innovation before buying (Rogers, 1983). An example of involves car dealers who usually offer test drives to potential car owners. The potential owners can thus rely on this trialability to assess the performance of newly promoted cars. The higher the trialability the car provides, the more likely it is that potential owners will form positive attitudes toward buying the trial car. Similarly, Wu and Wu (2005) determined that the trialability of electronic customer relationship management (e-CRM) significantly influences users' attitudes toward using e-CRM. Because e-books are previewable before subscriptions, the current study posits that the trialability of e-books is a predictor of readers' attitudes toward reading e-books. We developed the corresponding hypothesis as follows:

- H5.** The perceived trialability of e-books positively affects readers' attitudes toward e-book reading.

3.2 The Effects of Psychological Factors on Readers' Attitudes toward E-book Reading

3.2.1 Convenience

Convenient services and products are intended to increase ease in accessibility, save resources, and decrease frustration (Berry et al., 2002). For example, an airline provides online check-in service for passengers accessing their seat information while saving boarding time and effort, thus improving their gratification regarding the flying experience. Referring to e-commerce, the fast growth of online shopping is probably due to shopping web sites selling and delivering consumers' products online 24 hours a day, 7 days a week, with unlimited geographical boundaries. Thus, e-commerce offers service gratification to consumers, who do not have to worry about store hours, regardless of where they are located. Ahuja et al. (2003) reported that convenience is the primary reason for people forming favorable attitudes toward online shopping. Because e-books can be downloaded anytime from web sites and can be read anywhere a reader wishes, the perceived convenience of e-books is expected to be among the most crucial psychological factors affecting readers' attitudes toward e-book reading. We propose the following hypothesis:

- H6.** The perceived convenience of e-books positively affects readers' attitudes toward e-book reading.

3.2.2 Entertainment

Entertainment pertains to the extent to which a medium is fun and enjoyable to

its audience (Eighmey, 1997). Providing entertainment value leads to advantages for media users, thereby motivating them to use a particular medium more frequently (Luo, 2002). Previous studies have confirmed the effect of entertainment or enjoyment on users' attitudes toward using a medium. Tsang et al. (2004) reported that the perceived entertainment of mobile ads significantly affect the users' attitudes toward mobile advertising. Ha and Stoel (2009) identified that perceived shopping enjoyment positively affects consumers' attitudes toward online shopping. As hedonics is becoming increasingly crucial to nearly all uses of information technology (Wolf, 2003), e-book reading is considered fun and entertaining because it not only supports all of the functions of physical books but also provides additional features for readers, such as word searching, audible cues, and text-to-speech applications. We propose the following hypothesis:

- H7.** The perceived entertainment of e-books positively affects readers' attitudes toward e-book reading.

3.2.3 Social Interaction

Social interaction involves people satisfying their needs for socializing with friends, family, and other relations in society (Katz et al., 1973). Recently, e-book retailers have emphasized social features in promoting their e-books. For example, Google eBooks has announced a new feature for readers sharing their subscribed e-books with friends on the Google+ social network. Amazon provides readers with the social function of sharing their notes and annotations in e-books with others and of viewing popular highlights and notes by their favorite people. All of these functions lead to e-book reading becoming more social. Previous studies have determined the relationship between social interaction and media usage attitude. Ko et al. (2005) identified that the social interaction provided by a web site significantly affects users' attitudes toward using that web site. Leung and Wei (2000) reported that the social interaction provided by mobile phones plays an essential role in predicting users' attitudes toward using mobile phones. Because social interaction is currently promoted by some e-book retailers in practice, the higher the sociability the e-books provide, the more likely readers will take advantage of e-books to satisfy their social interaction needs. We propose the following hypothesis:

- H8.** The perceived social interaction of e-books positively affects readers' attitudes toward e-book reading.

3.2.4 Fashion

People may occasionally consider whether their adopting an innovation allures the attention of others' or is deemed fashionable, because they want their social statuses to be known by others (Peters and Allouch, 2005). Hence, fashion is recognized as a way in which people express themselves (Sproles and Burns, 1994) and form their attitudes toward innovation adoption (Leung and Wei, 2000). Campbell (2007) concluded that the fashion of mobilized communication forms

users' attitudes toward using mobile phones. Because e-book reading is considered a fashionable behavior (Pew, 2012), the current study anticipates that the fashion of e-book reading will increase readers' attitudes toward reading e-books. Thus, we developed the following hypothesis:

- H9.** The perceived fashion of e-books positively affects readers' attitudes toward e-book reading.

3.3 The Relationship between Attitude and Continuance Intention

Previous studies have postulated that no differences exist between satisfaction and attitude (e.g., Bhattacharjee, 2001). Accordingly, satisfaction has been treated and operationalized as one of the positive affects (a special case of attitude) resulting from the evaluations of subjects performed by people (Westbrook and Cote, 1980) and has been applied to investigate its impact on continuance intention (Chiu et al., 2007). However, Ekinci (2008) argued that satisfaction can have two formulations: transient satisfaction and cumulative satisfaction. The former results from the evaluation of single events that occur during a discrete interaction in an entire service experience, whereas the latter can be considered the overall evaluation of multiple transient experiences. Thus, transient satisfaction is suggested to be evaluated immediately after consumers participate in each event of a service, whereas cumulative satisfaction should be measured when transient satisfaction is measured, when consumers are able to synthesize all of the evaluations of discrete events in the same service. Because the current study attempted to understand readers' repeated behaviors of reading e-books rather than their one-time reading behaviors, enduring attitude was therefore more applicable to our study than transient satisfaction. Many studies have replicated and investigated the relationship between attitude and continuance intention (e.g., Kim et al., 2007; Lin, 2011). Based on these studies, we developed the following hypothesis:

- H10.** Consumers' enduring attitudes toward reading e-books are positively related to their continued intention to read e-books.

3.4 The Direct and Moderating Effects of Price Consciousness

As mentioned, the price of electronic publications is not consistent with the price of physical publications, and the former is usually cheaper than the latter; thus, readers maintain particular perceptions of prices in specific e-books, so that price perceptions of e-books influence e-book selections. Although slightly different definitions have been made for the term "price consciousness," the current study defines it as the perception that readers develop when making a value comparison between the gains and the monetary sacrifices of e-book readings. The effect of price consciousness on purchase/repurchase intention has been confirmed by studies in different fields (e.g., Jin and Suh, 2005; Gupta and Kim, 2007; Michaelidou and Christodoulides, 2011; Wu et al., 2011), we propose a similar hypothesis in the context of e-book reading as follows:

H11. Price consciousness positively affects readers' continuance intentions to read e-books.

In addition, readers might differ in their price consciousness to maximize the value of e-book readings, because they have different propensities to increase monetary value from purchases (Hong and Tam, 2006; Kim et al., 2008). In other words, consumers with different levels of price consciousness bound their tendencies differently to maximize monetary value from transactions.

Previous researchers have examined the moderating effects of price on consumers' attitudes and behaviors (Kukar-Kinney et al., 2007). Palazón and Delgado (2009) suggested a moderating role for price consciousness to affects the evaluation of price discounts and premiums. Hansen (2013) scrutinized the moderating effect on purchase intentions for new food products. Noh et al. (2013) claimed that price-conscious consumers view social commerce web site as a useful means of shopping, because it allowed them to pursue lower-priced products and services. Considering the conceptualization of price consciousness stated earlier, it appears that readers with high price consciousness are more likely to be motivated to enhance their acquisition value of e-book readings than consumers with low price consciousness. In addition, if greater savings can be obtained through increased e-book reading, then price consciousness may have a strong moderating effect on the relationship between attitudes and continuance intention for readers toward e-book reading. In this regard, we propose the following hypotheses:

H12. Price consciousness moderates the relationship between readers' attitudes toward e-book reading and their continuance intentions to read e-books.

4. Research Method and Analysis

4.1 Data Collection

A web-based questionnaire was sent to the respondents who have actual experience reading e-books. The survey was conducted for two weeks. By the time the survey was concluded, 1014 questionnaires were collected. The exclusion of 326 invalid questionnaires resulted in a total of 688 that were complete and valid for further analysis. Table 1 summarizes the respondent characteristics.

4.2 Measurement Items

Table 2 lists all of the questionnaire items and their supporting literature. The respondents were requested to rate each item on a seven-point Likert scale, on which a score of 1 means *strongly disagree* and 7 means *strongly agree*.

Table 1. Demographics (Number of Subjects = 688)

Measure	Items	Frequency	Percentage
Gender	Male	470	68.31
	Female	218	31.69
Age	Under 19	43	6.25
	20–24	331	48.11
	25–29	224	32.56
	30–34	73	10.61
	Over 35	17	2.74
Education	Junior high school or less	2	0.3
	High school	24	3.48
	University	460	66.86
	Graduate school	202	29.36
Occupation	Full-time student	416	60.47
	Office worker	148	21.51
	Government employee	45	6.54
	Freelancer	30	4.36
	Manufacturing	22	3.20
	Unemployed	27	3.92

Table 2. Summary of Measurement Items

Construct	Measure	Factor loading
Relative advantage (RA) <i>composite reliability = 0.89</i>		
	<u>Karahanna et al. (1999), Moore and Benbasat (1991)</u>	
RA1	Reading an e-book enables me to accomplish readings more efficiently	0.72
RA2	Reading an e-book improves the quality of reading I do	0.81
RA3	Reading an e-book enhances my reading performance	0.89
RA4	Overall, I find reading an e-book to be advantageous in my life	0.83
Compatibility (CP) <i>composite reliability = 0.85</i>		
	<u>Karahanna et al. (1999), Park and Chen (2007)</u>	
CP1	Reading the e-book is compatible with all aspects of my reading	0.73
CP2	Reading the e-book fits into my reading style	0.91
CP3	I think that reading the e-book fits well with the way I like to read	0.79
Complexity (CX) <i>composite reliability = 0.87</i>		
	<u>Karahanna et al. (1999), Park and Chen (2007)</u>	
CX1	Learning to read e-books is easy for me	0.76
CX2	I find it is easy to navigate e-books	0.79
CX3	It is easy for me to become skillful at reading e-books	0.80
CX4	My interaction with e-books is clear and understandable	0.79

Table 2. Summary of Measurement Items (Continued)

Construct	Measure	Factor loading
Trialability (TA) <i>composite reliability = 0.89</i>		
	<u>Karahanna et al. (1999), Park and Chen (2007)</u>	
TA1	Before deciding on whether or not to read any e-book, I would need to preview it on a trial basis	0.80
TA2	Before deciding on whether or not to read any e-book, I know that e-books are previewable	0.85
TA3	Before deciding on whether or not to read any e-book, I would need to properly try it out	0.82
TA4	I would be permitted to read an e-book on a trial basis long enough to see the content it provides	0.78
Observability (OB) <i>composite reliability = 0.89</i>		
	<u>Moore and Benbasat (1991), Park and Chen (2007)</u>	
OB1	It is easy for me to observe others reading an e-book in my life	0.84
OB2	I have had plenty of opportunity to see an e-book being read	0.90
OB3	I have been seen what others do by reading an e-book in my life	0.67
OB4	In my daily life, I have seen many people read an e-book on difference devices	0.84
Convenience (CV) <i>composite reliability = 0.90</i>		
	<u>Ko et al. (2005)</u>	
CV1	I can read e-books anytime, anywhere	0.80
CV2	I can get whatever knowledge I need from e-books without spending much effort	0.77
CV3	I can quickly find the most wanted e-book	0.87
CV4	Overall, reading e-books is convenient	0.86
Entertainment (ET) <i>composite reliability = 0.92</i>		
	<u>Ko et al. (2005)</u>	
ET1	Reading e-books is enjoyable	0.89
ET2	Reading e-books is entertaining	0.92
ET3	Reading e-books assists me to pass time	0.85
Social interaction (SA) <i>composite reliability = 0.88</i>		
	<u>Ko et al. (2005)</u>	
SA1	Reading e-books enables me to meet people with my reading interests	0.77
SA2	Reading e-books provides the way in which I can share what I have learned from e-books with others	0.90
SA3	Reading e-books strengthen my relationship with friends	0.86

Table 2. Summary of Measurement Items (Continued)

Construct	Measure	Factor loading
Fashion (FS) <i>composite reliability = 0.83</i>		
	<u>Choi et al. (2009)</u>	
FS1	I read e-books because it is stylish	0.87
FS2	I read e-books because it raises my status	0.78
FS3	Overall, reading e-books is both prevalent and fashionable	0.72
Price Consciousness (PC) <i>composite reliability = 0.90</i>		
	<u>Choi and Kim (2007)</u>	
PC1	The monetary value of finding low priced e-books is usually worth time and effort	0.84
PC2	I will shop at more than one e-book store to take advantage of lower prices	0.91
PC3	The time it takes to find low priced e-books is valuable	0.85
Attitude (ATT) <i>composite reliability = 0.89</i>		
	<u>Karahanna et al. (1999), Choi et al. (2009)</u>	
ATT1	My attitude toward reading e-books is favorable	0.82
ATT2	Reading e-books is beneficial to my daily life	0.87
ATT3	Overall, reading e-books is a pleasant experience	0.88
Continuance intention (CI) <i>composite reliability = 0.91</i>		
	<u>Thong et al. (2006)</u>	
CI1	I plan to read an e-book in the future	0.84
CI2	I intend to continue reading an e-book in the future	0.84
CI3	I expect my read of an e-book to continue in the future	0.87
CI4	I predict I will read an e-book in the future	0.81

4.3 Data Analysis

Hair et al. (2012) recommended an acceptance level of 0.7 for the composite reliability. As summarized in Table 2, the composite reliability values of all constructs in our model are greater than 0.84 and meet this criterion. As listed in Table 2, all items exhibited loadings greater than 0.67 within their respective constructs. Table 3 shows that all AVEs were larger than the variance because of the measurement error. The correlation between each pair of constructs was less than the corresponding average variances extracted (diagonal values). Thus, both convergent validity and discriminant validity were met (Fornell and Larcker, 1981).

Table 3. Correlations and AVE

Construct	AVE	RA	CP	CX	TA	OB	CV	ET	SA	FS	PC	ATT	CI
Relative advantage (RA)	0.67	0.82											
Compatibility (CP)	0.66	0.48	0.81										
Complexity (CX)	0.62	0.38	0.66	0.79									
Trialability (TA)	0.66	0.30	0.35	0.56	0.81								
Observability (OB)	0.67	0.28	0.31	0.26	0.16	0.82							
Convenience (CV)	0.68	0.36	0.48	0.34	0.25	0.51	0.82						
Entertainment (ET)	0.79	0.39	0.61	0.53	0.41	0.36	0.46	0.89					
Social interaction (SA)	0.71	0.42	0.52	0.29	0.17	0.51	0.55	0.60	0.84				
Fashion (FS)	0.63	0.46	0.44	0.37	0.32	0.30	0.45	0.62	0.64	0.79			
Price consciousness (PC)	0.75	0.45	0.56	0.45	0.34	0.30	0.42	0.48	0.42	0.48	0.87		
Attitude (ATT)	0.74	0.52	0.73	0.65	0.52	0.35	0.54	0.81	0.58	0.65	0.55	0.86	
Continuance intention (CI)	0.71	0.49	0.67	0.59	0.47	0.33	0.50	0.73	0.53	0.60	0.60	0.69	0.84

Notes: *Diagonal elements (in bold) are the square root values of the average variance extracted (AVE). Elements below the diagonal are correlations between constructs.

Table 4 outlines the goodness-of-fit of the structural model. All indices meet the requirements as suggested by Fornell and Larcker (1981).

Table 4. The Goodness-of-Fit of the Structural Model

Fit indices	Criteria	Results
χ^2/df	<3	1.98
Goodness of fit index (GFI)	>0.9	0.91
Adjusted for degrees of freedom (AGFI)	>0.8	0.89
Normed fit index (NFI)	>0.9	0.93
Root mean square error of approximation (RMSEA)	<0.08	0.04
Comparative fit index (CFI)	>0.9	0.96

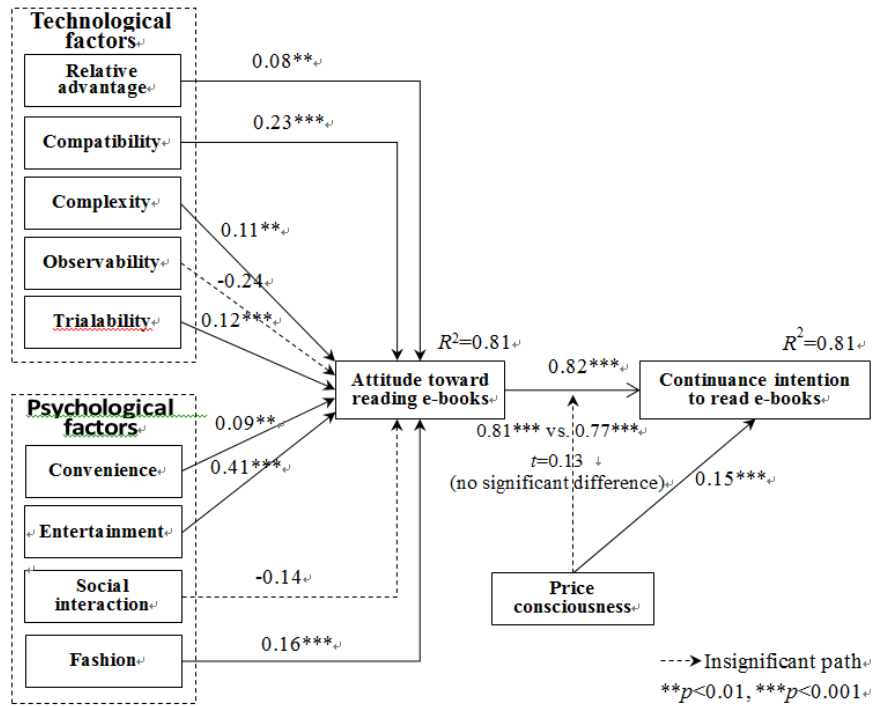
4.4 Hypotheses Testing Results

Figure 2 illustrates the standardized path coefficients between the constructs of the proposed model. All of the hypotheses were supported except for H4 and H8. To test the moderating effect of price consciousness, the respondents were divided into low- and high-price conscious groups, based on k-means clustering. We then compared their path coefficients of H10. As shown in Table 5, no significant difference was found between the two groups; thus, H12 was not supported.

Table 5. Testing for the Moderating Effect of Price Consciousness (H12)

Group	Path coefficient (H10)	t-value	Significance
Low price conscious (n=203)	0.81***	0.16	Not supported
High price conscious (n=485)	0.77***		

Figure 2. Structural Analysis of Research Model



5. Discussion

5.1 Summary of Results

The current study extended related research by examining the simultaneous effects of technical and psychological factors on readers' continuance intentions to read e-books. We adopted IDT and UGT as the underlying theories of our study, coupled with the ISCM. We also evaluated the direct and moderating effects of price consciousness on the relationship between readers' attitudes toward e-book reading and their continuance intentions to read e-books. The proposed model explained a significant proportion of the variance (81%), both in readers' attitudes toward e-book reading and their continuance intentions to read e-books (Figure 2). We summarize our findings as follows.

First, we found that compatibility is the most influential construct within technological factors that affects readers' attitudes toward e-book reading. This finding indicates that readers form positive attitudes toward reading e-books when their experiences of e-book reading are compatible with those of physical book reading. Trialability and complexity of e-book reading, by contrast, produce nearly the same impact on readers' attitudes toward e-book reading, whereas relative

advantage has only a minor influence. These findings imply that readers consider both trialability and complexity as the symbiotic factor, rather than relative advantage. Consequently, an e-book is unlikely to succeed if it provides only previews for readers and its operation is complex. Similarly, readers are less likely to praise the merits of an e-book if it provides no previews, regardless of whether its operation is simple. Thus, both compatibility and trialability are central to the e-book reading experience. In addition, although the advantages of e-books over physical books are prevalent, both types of books have their respective advantages and disadvantages; and, thus far, they cannot substitute each other. This might explain why relative advantage is not a decisive factor in the proposed model. Observability is the only insignificant construct within the same factor group. In fact, experienced readers are those who have engaged in e-book reading for an extended period. They do not rely on observability of e-books to reinforce their attitudes toward e-book reading; instead, they focus more on compatibility, trialability, complexity, and relative advantage in forming their positive attitudes toward e-book reading.

Second, entertainment exerts the strongest impact on readers' attitudes toward e-book reading, followed by the concept of fashion within psychological factors. This finding is consistent with the previous study at the Pew Internet Research Center (2012), which found that the entertainment value of e-book reading is one of the reasons why tablet owners read e-books. Our demographics also reveal that fiction and comics are the most subscribed e-books by readers. The exciting features of light-weight and stylishly designed e-book technology allows readers to enjoy reading in a novel way. However, convenience is the less influential factor affecting readers' attitudes toward e-book reading. This might be explained by the fact that the 3G connectivity is a well-established technology that readers who pervasively access their subscribed e-books demand. Thus, readers' attitudes toward repeated e-book reading are not particularly relevant to such an accessibility concern regarding e-books. In other words, the convenience of e-book accessibility can be considered a necessary but insufficient factor that cumulates readers' attitudes of repeated e-book reading. Social interaction has no impact on readers' attitudes toward e-book reading, possibly because the function of social interaction in using e-books is promoted only in the market, and most readers do not recognize this social activity while reading their e-books. In other words, their e-book reading experiences leave no impression on this newly announced function. The impact of social interaction is considered valid as long as the social function of e-books is widely adopted by the majority of e-book readers, a concept that is similar to the formation of online communities (Preece, 2001).

Finally, the finding shows that price consciousness significantly affects readers' continuance intentions to read e-books, whereas the moderating effect of price consciousness on the relationship between attitude toward reading e-books and continuance intention to read e-books is not significant. An e-book reader may claim that an intention to read e-books continually is positive because of having a positive attitude toward e-book reading. However, if an e-book is perceived to be too

expensive, an e-book reader might refrain from reading e-books. In other words, readers can exhibit positive attitudes toward e-book reading, despite caring about the prices of e-books or having no budgets to subscribe to expensive e-books; however, their positive intention to read e-books continually may be eliminated because intention is closely related to actual behavior than attitude is.

5.2 Managerial Implications

First, because of the growing popularity of e-books, e-book retailers must monitor readers' continuance intentions to survive in either a leasehold or buyout e-book business model. They are suggested to recognize the unique roles of compatibility, complexity, and trialability in supporting readers' readings. Readers who encounter barriers to these technical factors are unlikely to form a positive attitude toward e-book reading, which in turn results in cancelling e-book subscriptions. Thus, practitioners can determine continuance intentions by using the proposed technical factors to monitor readers' attitudes toward e-book reading.

Second, the results of our study indicate that complexity and trialability of e-book reading have nearly the same effect on readers' attitudes toward e-book reading. E-book retailers interested in fostering such an attitude should note that whether an e-book is easy to read can be determined according to trialability, and e-book retailers have no way to deny offering such open access to readers. Thus, providing a simplified reading experience for readers is essential. This is consistent with the merits of the technology acceptance model (Davis et al., 1989), in that the ease of use and usefulness of an information system are basic requirements for that system to be accepted by users.

Third, a need exists for enhancing the entertaining and fashionable elements of e-book reading. The entertainment value of e-book reading can be derived internally from appealing e-book content, whereas the fashion of e-book reading can be manifested externally through the exterior design of e-books. However, convenience is a fundamental characteristic of e-books; thus, it only slightly influences readers' attitudes toward e-book reading. The competition between regular airlines and budget airlines provides a good example for this necessary but insufficient situation: both types of airlines can transport passengers to destinations conveniently; however, budget airlines appeal to backpackers more than they do business travelers.

Fourth, although the relationship between social interaction and attitudes toward e-book reading is not significant, e-book retailers are suggested to promote the social function of e-books to readers. As with the concept of network externality (Allen, 1988), the more readers use the social function e-books, the more valuable the e-book reading is to each reader. Thus, the value of social interaction becomes significant after a certain subscription percentage of e-books have been achieved. Furthermore, e-book retailers may have difficulty securing a price premium from price conscious readers because price premium and price consciousness are conflicting, and price consciousness was found to directly affect readers' continuance intentions to read e-books. However, the market share of e-book retailers can be increased when a certain number of readers have used the social

function provided by e-books. Additional readers are expected to use the same function because of the social value exceeding the price. Therefore, e-book retailers could use two strategies for directly or indirectly maintaining readers' continuance intentions to read e-books: (1) sell e-books at low prices or (2) promote the social function of e-books (e.g., readers being able to see who is reading the same book they are, or sharing comments on or annotations in passages and books with other readers).

5.3 Theoretical Contributions

Regarding theoretical contributions, several findings are addressed. First, because readers might discard e-book readings soon after their initial subscriptions, focusing on continual reading behavior rather than one-time reading behavior is worthwhile. Although IDT provides a strong theoretical foundation for introducing people's adoption of an innovation, it does not specify the psychological factors of e-book reading. Conversely, UGT is a comprehensive theory that addresses psychological responses after a person uses a medium; however, it does not consider technological factors. Thus, integrating these two theories in the e-book reading context is one of our theoretical contributions.

Second, unlike previous studies on IS continuance (e.g., Bhattacharjee, 2001), which have primarily focused on the effects of confirmation and perceived usefulness on users' satisfaction in general, our study further identified that compatibility and entertainment are two factors salient to readers' attitudes toward e-book reading in particular. Distinguishing IS continuance from e-book continuance is necessary because information systems are often applied to assist users' in problem solving, whereas e-book readings are used to fulfill the multiple purposes of readers (e.g., acquiring knowledge and entertainment). Thus, our findings contribute to IS continuance literature in that readers' attitudes toward e-book reading depend mostly on the compatibility and entertainment provided by using e-books.

Finally, our findings demonstrate that price consciousness does not moderate the relationship between readers' attitudes toward e-book reading and their continued intention to read e-books. Because price consciousness can be considered the extent to which readers search for the monetary value of e-book reading in comparison with physical readings, readers' enduring attitudes toward e-book reading are insusceptible to price considerations, because the costs of e-book reading are usually lower than the costs of physical readings.

6. Limitations and Future Research

Although our findings provide meaningful implications for e-book reading continuance, this study has certain limitations. First, the reader responses in this study are cross-sectional data, which may not represent accurately the complex and dynamic interrelationships between the initial reading and long-term reading of e-books. The ideal empirical method for testing such differences is a longitudinal

analysis. Future studies are suggested to validate the proposed model in this regard. Second, different purposes (e.g., utilitarian purposes vs. hedonic purposes), platforms (e.g., Google vs. Amazon), and devices (computers vs. mobile device) for reading e-books may affect the constructs and their relationships in the proposed research model. To fully understand readers' continuance intentions to read e-books in different contexts, future studies are recommended to divide their respondents into several groups based on such diversity of e-book readings. Finally, whether a social function of an e-book is vital to readers deserves further examination. Based on our research, no information system journal articles confirm that social interaction supports community formation and establishes relationships across communities.

However, because an e-book involving social interaction is inherently designed to be an open system, other readers have access to participate in communication. When readers accept this function, they are exposed to a public access environment and are unable to prevent other readers from commenting on their readings, unless they cease engaging in e-book readings. Therefore, social interaction, to some extent, occurs, even when readers use e-books without caring what others are saying. Moreover, readers typically spend considerable time reading e-books. As such reading continues, readers unconsciously leave behind cues (e.g., preference, interest) for others to recognize them. For example, readers can easily disclose themselves to other readers who are reading the same e-book. Consequently, readers who regularly read e-books can expect to find both old and new friends each time they enter the e-book reading atmosphere. Future studies are recommended to discuss these issues of e-book social interaction in greater detail.

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