

Usefulness, Enjoyment, and Self-Image Congruence: The Adoption of e-Book Readers

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ABSTRACT

One challenge when launching new technologies is to overcome consumer resistance to change so as to accelerate market acceptance. This is the case of e-book readers. The present study investigates individuals' perceptions of the utilitarian and hedonic values of such devices and their congruence with self-image as determinants of adoption. Additionally, consumer profile and familiarity with the new technology as a whole influence individuals' perceptions of this particular technology and its congruence with self-image. Findings show that perceived enjoyment and self-image congruence complement perceived usefulness in forging a favorable attitude toward e-book readers and adoption intention, and that knowledge proves essential in the adoption process. Moreover, people highly involved with reading tend to perceive e-book readers as useless, which hampers their adoption.

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The adoption of new products and technologies is a classical research topic in marketing literature (Gatignon & Robertson, 1991; Rogers, 1983), and one that has recently received fresh impetus due to the adoption of new information and communication technologies (ICTs; Davis, Bagozzi, & Warshaw, 1989; Venkatesh & Davis, 2000). This research has resulted in a number of models and variables that Vendegem and De Marez (2011) summarize under an integrated approach. Despite the abundant literature, there are still some interesting cases of new technologies whose adoption is proving slower than expected and not as immediate as firms would wish, given the current context of shorter product life cycles (PLCs). Slow adoption may impede adequate diffusion, and thus affect the technology's ultimate success. Such may be the case of e-book readers (at least in certain countries), a technology that offers convenient storage, portability, and a reading experience that closely resembles conventional paper books, yet which faces the reluctance of many potential adopters who remain attached to conventional books.

As regards the product's characteristics, as with other ICTs such as smartphones and tablets, the e-book reader comprises both utilitarian and hedonic components (Hirschman & Holbrook, 1982). Although its utilitarian features are related to its functionality and efficiency as a device for reading and storing books, its hedonic characteristics are associated to the feelings of fun and pleasure experienced by users when reading. Such twofold attributes will affect individuals' evalua-

tion of the product. As Suh (2009) points out, hedonic products are appraised intuitively, whereas utilitarian products are evaluated on the basis of analytical rules and assessments.

Potential users are also a relevant aspect of the e-book reader adoption process. There are two different groups at whom this technology could be targeted: lovers of reading, and new ICT lovers. Although e-book readers should primarily be aimed at reading enthusiasts, many readers remain reluctant to switch from paper to the new alternative, criticizing e-book readers as devices that are unable to recreate the same feelings and pleasure as paper books. The other target group, ICT lovers, views these devices as a technology that might substitute paper in certain contexts. These divergent opinions and attitudes are also shared by publishers and manufacturers. One illustration of this situation is Apple's strategy. Steve Jobs stated in 2008: "It doesn't matter how good or bad the product is, the fact is that people don't read anymore" (New York Times, 2008), trying to explain that the Amazon Kindle book-reader would go nowhere. However, in 2010 the iPad was launched with an application for reading e-books, and Apple's iBookstore indeed competes with Amazon's Kindle store.

In such a context, the current research aims to explain attitudes toward e-book readers and the intention to adopt this technology, considering both the perceptions concerning these devices as well as the characteristics of potential adopters. The utilitarian

(perceived usefulness) and hedonic (perceived enjoyment) values of the technology are analyzed as determinants of adoption. In addition, the effect of individuals' self-image congruence is explored as a further important psychological driver of adoption. Finally, the proposed model contends that potential user profile, measured in terms of their interest in or involvement with new ICTs and with reading, as well as their knowledge of e-book readers, influences perceptions concerning the functional and hedonic adoption drivers of the technology, and congruence with individuals' self-image.

The paper contributes to the literature on new technology adoption by positing and testing an integrative model that simultaneously considers not only utilitarian drivers, but also hedonic and, what is more innovative or novel, psychological drivers. In addition, consumer involvement and familiarity with the new technology are also incorporated into the model as antecedents of the perceptions on these adoption drivers. The current model is based on the Technology Adoption Model—TAM (Davis, Bagozzi, & Warshaw, 1989), which is expanded to consider the hedonic perspective (Bruner & Kumar, 2005), and on the Self-Congruity Theory (SCT; Sirgy, 1985). Certain authors have pointed to TAM's inability to account for adoption of new technologies that are constantly evolving (Bagozzi, 2007; Benbasat & Barki, 2007). Indeed, Wells, Campbell, Joseph, Valacich, and Featherman (2010) proposed going further than the core idea of the TAM (predicting adoption based on perceived ease of use and perceived usefulness) in order to understand adoption of technological innovations in dynamic and emerging contexts. Certain studies have expanded the TAM to embrace hedonic factors (e.g., Bruner & Kumar, 2005; Dabholkar & Bagozzi, 2002; Kulviwat, Bruner, Kumar, Nasco, & Clark, 2007; Pagani, 2004). However, to date there is no TAM-based research that also considers technology's congruence with potential adopters' self-image.

The research in the present paper is framed within the context of e-book readers. Marketing literature has devoted little attention to such devices thus far. Previous research has predominately focused on the role of e-book readers in education (Landoni, Wilson, & Gibb, 2001; Shiratuddin, 2005), its benefits (Chen, 2003), and, more recently, factors predisposing toward use thereof (Colleen, Chiagouris, & Gopalakrishna, 2012; Huang & Hsieh, 2012; Lai & Chang, 2011). Despite the scant number of works, exploring e-book reader adoption is relevant from a theoretical perspective, since these devices combine functional, hedonic, and psychological adoption drivers. It also proves interesting from a managerial perspective. Manufacturers' apprehension regarding the future of this technology (in particular, since the launch of tablets as a feasible replacement for e-book readers), publishers' reluctance to publish e-books due to the risk of piracy, and certain consumers' mistrust of what they feel to be the "enemy" of paper books, are just some of the current market concerns. Likewise, findings can be extended to the adop-

tion of other ICT such as tablets, smartphones, social networks, or software applications, which may also be driven by utilitarian, hedonic, and psychological factors, and may face potential consumers who evidence varying degrees of product involvement.

The work is organized as follows. In the first section, the theoretical models on which the proposal is based, the TAM and the SCT, are reviewed. The second section sets out the details of the empirical analysis. The final section offers the main conclusions, and highlights both the key theoretical and managerial implications to emerge from the findings, in addition to future research lines and areas where the work may be improved.

CONCEPTUAL FRAMEWORK AND HYPOTHESES

Lam, Ahearne, Hu, & Schillewaert (2010) state that literature on new product adoption and brand-switching has traditionally focused on the utilitarian value of the new product or the new brand as the main driver of adoption and brand-switching. However, recent works (Bruner & Kumar, 2005; Kulviwat et al., 2007) have criticized this approach, urging that other drivers of new product adoption and brand-switching be considered. On this basis a model is proposed, which draws on the theoretical and conceptual framework of the Technology Acceptance Model (TAM) and the SCT in order to explain e-book reader adoption.

Utilitarian and Hedonic Drivers of Adoption: Technology Acceptance Model

In agreement with the original proposal by Davis, Bagozzi, and Warshaw (1989), the TAM assumes that perceived ease of use and usefulness of a new system or technology have a major impact on an individual's attitude toward such a technology and are thus related to the intention to use it and, in turn, to actual use. Davis (1989, p. 320) defines perceived ease of use as the degree to which a person believes that using a technology would be free from effort, whereas perceived usefulness is defined as the degree to which people believe that using the technology would enhance their performance. In addition, perceived usefulness depends on perceived ease of use and is directly linked to the intention to use the new technology. In other words, intention to use can be based on an expected improvement in job performance regardless of attitude (Liao, Palvia, & Chen, 2009; Venkatesh & Davis, 2000).

For over two decades, TAM has been the main theoretical approach for studying new technology adoption. Application of the original TAM as well as extensions thereof (Venkatesh & Bala, 2008; Venkatesh & Davis, 2000; Venkatesh, Morris, Davis, & Davis, 2003) have proved that perceived ease of use and usefulness, the two cognitive beliefs supporting the TAM, are

powerful antecedents of adoption (Benbasat & Barki, 2007). However, according to Bagozzi (2007), one of the model's main weaknesses is that it has led to involuntary bias in adoption literature toward cognitive beliefs, and has ignored other factors that account for attitude and intention to use technological products and services.

Recent works (Bruner & Kumar, 2005; Chtourou & Souiden, 2010; Kulviwat et al., 2007; Nasco, Kulviwat, Kumar, & Bruner, 2008; Pagani, 2004; Wells et al., 2010) criticize the lack of any emotions and/or affective beliefs in TAM. According to these works, hedonic motives (fun, enjoyment, or entertainment value) are important predictors of the adoption of technological products and services such as digital mobile television, mobile services and applications, personal digital assistants, self-service technologies, or sensory-enabling technology (Bruner & Kumar, 2005; Dabholkar & Bagozzi, 2002; Hong, Thong, Moon, & Tam, 2008; Kim & Forsythe, 2008; Kulviwat et al., 2007; Pagani, 2004).

Therefore, in line with the principles of the TAM (Davis, Bagozzi, & Warshaw, 1989), and subsequent extensions thereof, it is argued that attitude toward the e-book reader and the intention to adopt it are influenced by both utilitarian motivations, that is, perceived ease of use and usefulness of the device (Davis, Bagozzi, & Warshaw, 1989; Lee, Shih-pang, & Liu, 2007; Liao, Palvia, & Chen, 2009) as well as hedonic motivations, that is, perceived enjoyment (Bruner & Kumar, 2005; Dabholkar & Bagozzi, 2002; Pagani, 2004). This twin perspective fits the case of e-book readers, since these devices combine functional benefits as well as advantages related to fun and pleasure.

The perceived usefulness of the e-book reader, that is, the belief that books may be handled more efficiently and that these devices offer benefits over conventional books, generates a positive attitude toward them. Additionally, given a system that is perceived as useful, an individual might directly form a strong behavioral intention to use the system without forming any particular attitude.

Although several studies agree on the importance of considering hedonic drivers, such as the fun element, in technological adoption models, there is no unanimity *vis-à-vis* the role of perceived enjoyment in such models (Chtourou & Souiden, 2010; Kim, 2008; Liao, Tsou, & Huang, 2007; Pagani, 2004). In the current research, perceived enjoyment is considered as an independent antecedent of attitude (Bruner & Kumar, 2005; Kim & Forsythe, 2008). Perceived enjoyment has been defined as "the extent to which the activity of using a specific system is perceived to be enjoyable in its own right, apart from any performance consequences resulting from system use" (Davis, Bagozzi, & Warshaw, 1992). As has been demonstrated in the case of mobile devices (Bruner & Kumar, 2005), fun is an important antecedent of attitude. Technological devices are used not only because of the advantages they afford, but because of the pleasure and perceived playfulness

involved in their use. Kim and Forsythe (2008) explain that the entertainment value of a technology may encourage purchase intention in addition to creating positive attitudes toward said technology.

Moreover, the easier it is for an individual to use an e-book reader, the greater the perceived usefulness (Chung & Tan, 2004; Wu & Kuo, 2008). The perception of enjoyment also decreases when the technology is complicated and difficult to learn, and increases when learning to use it proves quick and easy (Bruner & Kumar, 2005; Kim & Forsythe, 2008). In addition to the indirect effect regarding ease of use on attitude through usefulness and enjoyment, the lack of complexity involved in using the e-book reader is also expected to improve attitudes toward it. Even if empirical evidence remains inconclusive, the works of Childers, Carr, Peck, and Carson (2001) and Dabholkar and Bagozzi (2002) show that ease of use has a direct and positive effect on attitudes toward the technology.

Finally, the TAM (Davis, Bagozzi, & Warshaw, 1989) posits that individuals' intention to adopt a technology depends on attitudes toward it. This part of the model is based on the Theory of Reasoned Action (Ajzen & Fishbein, 1980): individuals who display a positive attitude toward a product (here, e-book readers) are more likely to evidence positive behavior, that is, they are more likely to adopt it.

Therefore, the following hypotheses are proposed (see Figure 1):

- H1:** The more favorable the attitude toward e-book readers, the greater the intention to adopt this technology.
- H2:** The greater the perceived usefulness of e-book readers, the more favorable the attitude toward these devices (H2a) and the greater the intention to adopt this technology (H2b).
- H3:** The greater the perceived enjoyment in using e-book readers, the more favorable the attitude toward these devices (H3a) and the greater the intention to adopt this technology (H3b).
- H4:** The greater the perceived ease of use of e-book readers, the greater the usefulness (H4a) and the enjoyment (H4b) perceived in using these devices, and the more favorable the attitude toward this technology (H4c).

Psychological Drivers of Adoption: Self-Congruity Theory

The image that consumers have of an innovation may accelerate or curb the adoption process. This image may

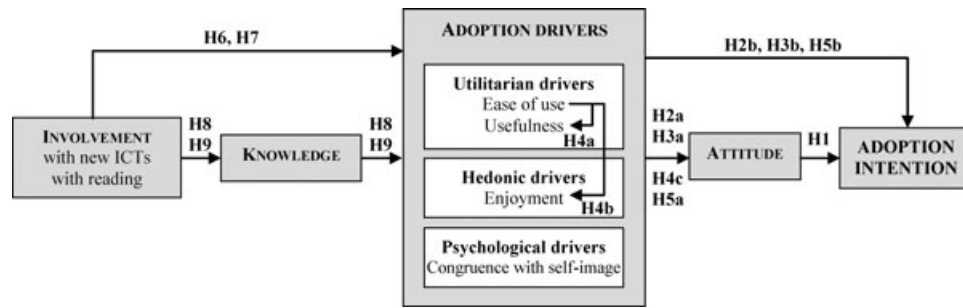


Figure 1. Proposed model and hypotheses.

be positive, and may therefore be one component of the innovation's relative advantage (Rogers, 1983). However, said image may be negative, and act as a barrier to adoption thereof (Kuisma, Laukkanen, & Hiltunen, 2007). Kleijnen, Ruyter, and Andreassen (2005) and Cowart, Fox, and Wilson (2008) introduce the concept of self-image congruence as a relevant criterion for adoption.

The SCT posits that consumer behavior is determined by the congruence resulting from a psychological comparison involving the product-user image and the consumer's self-concept (Cowart, Fox, and Wilson, 2008; Sirgy, 1985). Higher self-congruity is experienced when consumers feel that the product-user image matches their own self-image, while low self-congruity is experienced when the product-user image does not match the consumer's perceived self-image (Cowart, Fox, & Wilson, 2008). Low self-congruity results in technology resistance.

Sirgy (1985) proposes that products and services can have personality attributes or psychological associations that determine their image. The psychological comparison between this image of a product, the image of the typical user of that product, and the consumer's self-concept determines congruence with self-image and, subsequently, consumer behavior. Consumers are more likely to adopt innovations that match their own values, beliefs (Rogers, 1983), and lifestyle (Kleijnen, Ruyter, & Wetzels, 2004). As an example, Cowart, Fox, and Wilson (2008) indicate that a consumer electronics innovator is driven by the goal of possessing electronic devices that are consistent with an image of technical sophistication, wealth, or intelligence, such characteristics proving consistent with the consumer's self-image.

In the studied context, consumers who perceive e-book readers to be compatible with their lifestyle and preferences will display a positive attitude toward them as well as less resistance to change. It is therefore hypothesized that

- H5:** The greater the perceived congruence of e-book readers with the consumer's self-image, the more favorable the attitude toward these devices (H5a) and the greater the intention to adopt them (H5b).

The Role of Involvement and Knowledge in the Adoption Process

Antecedents of the above-mentioned product adoption drivers are also considered in the model. In particular, the research focuses on consumer profile, measured in terms of involvement and knowledge.

Zaichkowsky (1985) defines involvement as the extent to which a decision is relevant for individuals in terms of their basic values, goals, and self-concept. Marketing research has shown that consumer involvement influences the decision-making process (Bauer, Sauer, & Becker, 2006; Petty, Cacioppo, & Schumann, 1983). In the context of innovation adoption, it has been established that the innovator's profile differs for diverse product categories, since this profile relates to the individual's interest and involvement with the category (Goldsmith & Hofacker, 1991; Midgley & Dowling, 1978, 1993). However, research into adoption of new technologies has paid little attention to involvement. Some studies have proposed extending the TAM where the user's involvement acts as an antecedent of both perceived usefulness and ease of use (Jackson, Chow, & Leitch, 1997; McKechnie, Winklhofer, & Ennew, 2006).

In the case of e-book readers, involvement relates to individuals' involvement with new ICTs and reading. The proposed model considers both of these as antecedents of the functional, hedonic, and psychological drivers of the adoption of and the intention to use these devices.

Involvement with new ICTs, that is, being keenly interested in these technologies, will have a positive influence on self-image congruence, usefulness, and enjoyment perceptions. Lovers of new ICTs will perceive low risk and evidence little resistance related to psychological discomfort (Ram, 1989; Sheth, 1981) since they will perceive e-readers as being compatible with their lifestyle and preferences, and related to their self-image as innovators in adopting new technological devices. Moreover, people who are highly involved with new ICTs will be more qualified to perceive both the utilitarian and hedonic advantages of e-book readers.

Reading enthusiasts are an obvious target for e-book reader manufacturers and sellers. What is less clear, however, is how individuals' involvement with reading (i.e., their interest and passion for books and reading as a cultural and intellectual activity) affects

the perceived congruence of e-book readers with their self-image. On the one hand, this technology may fit their self-image as lovers of reading, such devices possibly being perceived as congruent with this passion and a means of enhancing their self-image as typical readers of many books. On the other hand, readers may develop a special attachment and affection toward traditional paper books, thereby reducing self-image congruence. In the current work, this is the proposal put forward. In fact, this is the opinion of relevant authors such as Jonathan Franzen who declared that other serious readers, such as himself, would not use e-readers (see <http://www.ibtimes.com/jonathan-franzen-warns-dangers-e-readers-he-right-402670>, accessed November 2012). As regards perceptions concerning usefulness and enjoyment, regular readers should perceive more utilitarian advantages in the adoption of e-reader devices—the possibility of storing a large number of books, or the saving inherent in buying e-books that are cheaper than paper books, to mention just a few—than infrequent or occasional readers. Perceived usefulness should therefore increase. However, some regular readers criticize this technology because of its inability to convey the same feelings and pleasure as paper books. In other words, they perceive that e-book readers eclipse paper books in functional characteristics, but may fail when it comes to hedonic characteristics, that is, enjoyment. Then, the following hypotheses are proposed:

- H6:** The greater the involvement with new ICTs, the greater the perceived ease of use (H6a), usefulness (H6b), enjoyment (H6c), and congruence with self-image (H6d).
- H7:** The greater the involvement with reading, the greater the perceived ease of use (H7a) and usefulness (H7b), and the less the perceived enjoyment (H7c) and congruence with self-image (H7d).

Knowledge of e-book readers is also considered and is posited to intervene in the relationships between the involvement variables and perceptions concerning the drivers or motives to adopt this technology (ease of use, usefulness, enjoyment, and self-image). As Reinders, Frambach, and Schoormans (2010) point out, innovation decision theory contends that the adoption of new products by consumers is the outcome of a cognitive process of information search and processing (Gatignon & Robertson, 1991). When confronted with a new product, consumers must first gain some understanding of the innovation in order to form an attitude toward it (Rogers, 1983). Product understanding is thus an essential precondition for acceptance of a new product. Indeed, several works highlight the importance of knowledge in the adoption process (Eriksson & Nilsson, 2007; Moreau, Lehmann, &

Markman, 2001). Potential e-book reader adopters (individuals involved with ICT and reading) will thus initiate a cognitive process in order to acquire knowledge about these devices. The greater the consumer's knowledge of e-book readers, the greater the likelihood they will recognize both the utilitarian and the hedonic advantages thereof, and appreciate how the device may be compatible and congruent with their self-image (see <http://forbookssake.net/2012/07/17/e-readers-what-do-you-think/>, accessed November 2012). Accordingly, it is suggested that

- H8:** Knowledge of e-book readers mediates the relationship between involvement with new ICT and perceived ease of use (H8a), usefulness (H8b), enjoyment (H8c), and congruence with self-image (H8d).
- H9:** Knowledge of e-book readers mediates the relationship between involvement with reading and perceived ease of use (H9a), usefulness (H9b), enjoyment (H9c), and congruence with self-image (H9d).

METHOD

Sample and Data Collection

An online survey was devised in order to collect data. The survey was delivered through online social networks and forums. In order to gather answers from different consumer profiles, the questionnaire was included in several social network groups and pages related to reading, bookshops, and e-books, as well as forums related to new technologies. In order to control the answers (to ensure that the response was generated by a person), respondents had to copy a *captcha* to answer the questionnaire.

In the introduction to the questionnaire, it was explained that the aim of the research was to explore consumer perceptions of e-books and e-readers and that the questionnaire could be answered by both users and nonusers of e-readers. For the purpose of the current research, only responses from nonusers of e-readers have been considered. After an initial filter process where some questionnaires were removed due to incompleteness or wrong answers, the final sample comprises 662 nonusers (36.8% men and 63.2% women; 51% under the age of 25; 24.7% between 26 and 35; 10.7% between 36 and 45; 10.4% between 46 and 55; 2.8% between 56 and 65; and 0.3% over 65).

Following Armstrong and Overton (1977), an analysis of potential nonresponse bias was performed by comparing the characteristics of early and late respondents. No significant differences were found.

Table 1. Variables, Descriptive Statistics, and Reliability, and Validity Tests.

Constructs and Indicators	Mean	SD	Loading
Involvement with new ICTs (CR = 0.88; AVE = 0.64)			
I consider myself to be an expert in the use of new communication technologies	3.16	1.05	0.74
I enjoy trying out new communication technologies that come onto the market	3.33	1.15	0.85
I consider myself to be an innovator and I purchase devices when they have just been launched onto the market	2.37	1.04	0.81
I own a wide range of devices related to new technologies	2.74	1.10	0.81
Involvement with reading (CR = 0.89; AVE = 0.67)			
Reading is one of my main hobbies	3.48	1.22	0.87
I devote most of my free time to reading	2.71	1.12	0.83
I have a wide range of books	3.43	1.17	0.74
Buying and collecting books gives me tremendous pleasure	3.01	1.35	0.84
Knowledge about e-book readers (n.a.)			
I am very familiar with e-books and e-book readers	2.66	1.10	1.00
Up to now I have had hardly any information about such devices ^a	3.18	1.31	–
Perceived ease of use (CR = 0.93; AVE = 0.81)			
I think that it is an easy device to use	3.50	0.97	0.85
I think that learning to use these devices is easy	3.60	0.93	0.96
I think that you can learn how to use them quickly	3.71	0.90	0.88
Perceived usefulness (CR = 0.86; AVE = 0.60)			
I think that using an e-reader may make handling books more efficient	3.24	1.05	0.78
Using e-readers may make reading easier	3.00	1.09	0.77
I think that using e-readers is useful	3.39	1.00	0.79
I think that using e-readers offers an advantage over conventional books	2.74	1.10	0.75
Perceived enjoyment (CR = 0.93; AVE = 0.87)			
I think that using this device may be fun	3.28	0.98	0.89
I think that using this device may prove extremely enjoyable	3.30	0.98	0.97
Congruence with self-image (CR = 0.92; AVE = 0.79)			
I identify with the typical e-reader user	2.26	1.11	0.86
I fit in with the typical image of an e-reader user	2.28	1.06	0.95
The image of the typical e-reader user reflects the kind of person I am	2.17	1.06	0.86
Attitude toward e-book readers (CR = 0.87; AVE = 0.63)			
I think that using an e-book reader to read is ...			
A bad/good idea	3.32	1.03	0.71
Negative/positive	3.34	1.00	0.76
Not very appealing/appealing	3.24	1.16	0.85
An unpleasant/pleasant idea	3.29	0.97	0.84
Adoption intention (CR = 0.76; AVE = 0.61)			
How likely are you to be willing to purchase an e-reader?	2.60	1.06	0.77
If you had access to an e-book reader, would you be willing to use it to read books?	3.60	1.03	0.79
Normative consciousness about illegal downloads ^b (CR = 0.93; AVE = 0.77)			
If the government alerts people to the seriousness of downloading books legally, I won't make any illegal downloads	2.31	1.33	0.94
If distribution companies alert people to the seriousness of downloading books legally, I won't make any illegal downloads	2.33	1.27	0.97
If my family and friends urge me to download books legally, I won't download illegally	2.46	1.27	0.86
If other people will think ill of me because I download books illegally, I will stop doing so	2.31	1.23	0.73

Note: CR = composite reliability; AVE = average variance extracted; n.a. = not applicable.

^aReversed and suppressed item.

^bMarker variable.

Construct Measurement and Validation

Research constructs were measured using 5-point Likert scales or semantic differential scales (see Table 1). *Involvement with new ICTs* was operationalized through a four-item scale expressing the extent to which individuals enjoy ICT and see themselves as innovators in new communication technologies (Donthu & Gilliland, 1996). A four-item scale was created to

measure *involvement with reading*, which indicates to what extent respondents consider reading as a main hobby and devote time to it. Based on the proposal by Raju, Lonial, and Mangold (1995), *knowledge of e-book readers* was measured with two items reflecting perceived knowledge of and amount of information on these devices and on e-books. *Perceived ease of use* and *perceived usefulness* were measured with the scales applied by Kulviwat et al. (2007) and based on the

Table 2. Correlation Matrix.

	1	2	3	4	5	6	7	8	9
1. Involvement with new ICTs	0.80	0.05	0.53**	0.28**	0.27**	0.24**	0.31**	0.26**	0.34**
2. Involvement with reading	0.07	0.82	0.25**	0.08*	-0.07	-0.02	0.08*	0.01	0.17
3. Knowledge about e-book readers	0.54**	0.26**	n.a.	0.30**	0.30**	0.15**	0.29**	0.32**	0.41**
4. Perceived ease of use	0.29**	0.09*	0.32**	0.90	0.52**	0.45**	0.19**	0.41**	0.41**
5. Perceived usefulness	0.28**	-0.05	0.32**	0.53**	0.77	0.56**	0.38**	0.74**	0.68**
6. Perceived enjoyment	0.25**	-0.01	0.16**	0.46**	0.57**	0.93	0.25**	0.49**	0.51**
7. Congruence with self-image	0.32**	0.09*	0.30**	0.20**	0.39**	0.27**	0.89	0.43**	0.59**
8. Attitude toward e-book readers	0.28**	0.02	0.33**	0.42**	0.74**	0.50**	0.44**	0.79	0.79**
9. Adoption intention	0.35**	0.18**	0.42**	0.42**	0.69**	0.52**	0.59**	0.79**	0.78
10. Normative consciousness illegal downloads (marker variable)	-0.01	0.16**	0.00	-0.04	0.07	0.02	0.12**	0.07	0.03

Note: Significance levels: ** $p < 0.01$; * $p < 0.05$ (two-tailed test). n.a. = not applicable.

Zero-order correlations appear below the diagonal; correlations adjusted for potential common method bias (Lindell & Whitney 2001) appear above the diagonal. Bold numbers on the diagonal show the square root of AVE.

original scales proposed by Davis, Bagozzi, and Warshaw (1989). *Perceived enjoyment* was measured with a two-item scale based on the proposals by Liao, Tsou, and Huang (2007) and Kim (2008). *Congruence with self-image* was measured with the three-item scale proposed by Sirgy et al. (1997) and used by Cowart, Fox, and Wilson (2008). *Attitude toward e-book readers* was measured with a four-item semantic differential scale reflecting to what degree respondents' opinions concerning these devices proved positive (Coyle & Thorson, 2001). Finally, *adoption intention* was measured with a two-item scale indicating individuals' willingness to purchase an e-book reader and use it to read e-books.

In order to employ Lindell and Whitney's (2001) marker variable technique to assess common method variance (CMV), an additional construct reflecting individuals' *normative consciousness about illegal downloads* was introduced. This variable was operationalized through a four-item scale based on the work by Hsu and Shiue (2008).

The model and research hypotheses were tested using structural equation modeling (SEM) with AMOS (v18.0). Prior to hypothesis testing, confirmatory factor analysis (CFA) was performed, which showed the scales used in the study to be unidimensional, reliable, and valid, and which provided a very good fit to the data ($\chi^2/df = 862.1/390$, $p < 0.00$; GFI (Goodness of Fit Index) = 0.92; AGFI (Adjusted Goodness of fit Index) = 0.90; NFI (Normed Fit Index) = 0.94; CFI (Comparative Fit Index) = 0.97; RMSEA (Root Mean Square Error of Approximation) = 0.04, p close-fit = 1.00). Analysis of the measurement model reveals that all loadings are highly significant ($p < 0.01$) and well above the minimum recommended value of 0.7, with the sole exception of one item measuring the *knowledge* construct, whose standardized loading was only 0.39 and which was omitted due to poor reliability (Bagozzi, Yi, & Phillips, 1991; Saxe & Weitz, 1982). Average variance extracted (AVE) and composite reliability exceeded 0.50 and 0.70, respectively, for all constructs, thus ensuring adequate internal consistency (Fornell & Larcker, 1981). Following MacKenzie, Podsakoff, and Podsakoff (2005), discriminant validity was assessed by testing

that all construct intercorrelations were significantly below 0.71, and that the square root of the AVE was greater than the correlation with the other constructs (see Table 2). Both conditions are met in all cases except *attitude toward e-book readers* and *adoption intention*, whose correlation is 0.79.

A confirmatory factor analytic approach to Harman's one-factor test was used to examine CMV. All measures of goodness of fit indicated a worse fit for the one-factor model than for the original measurement model. Second, Lindell and Whitney's (2001) marker variable technique was used applying normative consciousness about illegal downloads as the marker variable. Applying the formulas suggested by Lindell and Whitney (2001), CMV-adjusted correlations among the research constructs were computed using the second largest positive correlation between the marker variable and the model constructs ($r = 0.02$) as a conservative proxy for CMV. All the significant correlations remained significant after CMV adjustment (see Table 2), which, according to Malhotra, Kim, and Patil (2006), indicates that potential distortion due to a method bias is at most minimal. As a further test, this marker variable was incorporated into the empirical model as a control variable and was seen to have no significant impact on the dependent variables. More importantly, results remained unchanged whether this variable was included in the model or not.

ANALYSIS AND RESULTS

As mentioned above, an SEM approach was used to test the proposed model. Tables 3 and 4 summarize the empirical results. Since several mediated relationships are suggested in the hypotheses, and following recommendations in recent literature on mediation analysis (Cheung & Lau, 2008; Shrout & Bolger, 2002), the study uses a bootstrap procedure (2000 subsamples were randomly generated) to define the bias-corrected confidence intervals of the total, direct, and indirect effects. This allows obtaining more accurate estimates of standard errors and, as can be seen in Table 4, to formally test the

Table 3. Structural Model Results (Standardized Coefficients).

	Relationship	β
H1	Attitude toward e-book readers → Adoption intention	0.50**
H2a	Perceived usefulness → Attitude toward e-book readers	0.60**
H2b	Perceived usefulness → Adoption intention	0.14*
H3a	Perceived enjoyment → Attitude toward e-book readers	0.10*
H3b	Perceived enjoyment → Adoption intention	0.11*
H4a	Perceived ease of use → Perceived usefulness	0.46**
H4b	Perceived ease of use → Perceived enjoyment	0.43**
H4c	Perceived ease of use → Attitude toward e-book readers	0.03
H5a	Congruence with self-image → Attitude toward e-book readers	0.18**
H5b	Congruence with self-image → Adoption intention	0.29**
H6a	Involvement with new ICTs → Perceived ease of use	0.15**
H6b	Involvement with new ICTs → Perceived usefulness	0.04
H6c	Involvement with new ICTs → Perceived enjoyment	0.15**
H6d	Involvement with new ICTs → Congruence with self-image	0.21**
H7a	Involvement with reading → Perceived ease of use	0.02
H7b	Involvement with reading → Perceived usefulness	-0.14**
H7c	Involvement with reading → Perceived enjoyment	-0.04
H7d	Involvement with reading → Congruence with self-image	0.03
H8	Involvement with new ICTs → Knowledge about e-book readers	0.56**
H9	Involvement with new ICTs → Knowledge about e-book readers	0.24**
H8-9a	Knowledge of e-book readers → Perceived ease of use	0.24**
H8-9b	Knowledge of e-book readers → Perceived usefulness	0.21**
H8-9c	Knowledge of e-book readers → Perceived enjoyment	-0.05
H8-9d	Knowledge of e-book readers → Congruence with self-image	0.19**
Control	Awareness of illegal downloads → Attitude toward e-book readers	0.02
	Awareness of illegal downloads → Adoption intention	-0.05

Note: Significance levels: ** $p < 0.01$; * $p < 0.05$ (one-tailed test for hypothesized effects and two-tailed test for control relationships, and for H7b, for which the opposite sign was hypothesized).

significance of the intervening effects acknowledged in the model. This enables to formally test whether knowledge of e-book readers intervenes or not in the relationship between the involvement variables and the adoption drivers considered (as hypothesized in H8 and H9),

as well as to better describe how these drivers are related (directly or indirectly) to adoption intention (as implicitly derived from hypotheses H1–H5).

Closely related to the previous comment, it should be noted that in order to assess hypotheses H6 and H7, two alternative structural models were estimated and compared: one in which knowledge of e-book readers completely mediates the relationships between the involvement variables and adoption drivers, and another in which the direct paths between the former and the latter variables were estimated freely. The second (a partial mediation model) provided a significantly better fit— $\Delta\chi^2(df) = 44.5(8), p < 0.00$ —and was the model used to test all the hypotheses. This partial mediation model fits the data very well ($\chi^2/df = 916.7/402, p < 0.00$; GFI = 0.92; AGFI = 0.90; NFI = 0.94; CFI = 0.96; RMSEA = 0.04, p close-fit = 1.00) and explains above 59% and 73%, respectively, of the variance of attitude toward e-book readers and adoption intention.

Generally speaking, hypotheses H1–H5 are supported. Exercising due caution (it should be remembered that attitude and adoption intention do not pass a strict discriminant validity test), H1 can be accepted. In other words, a positive attitude toward e-book readers leads to a greater intention to adopt the device ($\beta = 0.50, p < 0.01$). These two variables are positively influenced by perceived usefulness (H2a and H2b are supported) and enjoyment (H3a and H3b are also supported), as well as by the perception of congruence with self-image (H5a and H5b are likewise supported). In contrast, only partial support was found for H4. As suggested in TAM, perceived ease of use has a positive and significant influence on perceived usefulness ($\beta = 0.46, p < 0.01$) and enjoyment ($\beta = 0.46, p < 0.01$), although findings indicate that the direct effect of perceived ease of use on attitude toward e-book readers is not significant ($\beta = 0.03, p > 0.05$). However, this latter result should not be interpreted as a rejection of H4c, since the indirect effect is of great magnitude and highly significant (see Table 4), meaning that the relationship between ease of use and attitude is completely mediated by perceived usefulness and enjoyment.

According to the findings, perceived usefulness emerges as the most important determinant of e-book reader adoption, although congruence with self-image and perceived fun are also significant drivers of a positive attitude toward these devices and the intention to adopt and use them. Furthermore, as can be seen from Table 4, there is an interesting contrast in how the considered utilitarian, hedonic, and psychological factors are related to the intention to adopt an e-book reader. In all three cases, their effect on adoption intention is partially mediated by attitude toward this device. However, the data show a remarkable variation in the relative magnitudes of the direct and indirect effects. While for perceived usefulness the relationship with adoption intention is mainly indirect (i.e., the mediating effect of the attitude construct is not complete but is nearly so), for perceived enjoyment and congruence with self-image the relationship is mainly direct.

Table 4. Total, Direct, and Indirect Standardized Effects.

Effect	Total	Direct	Indirect	Hypotheses and Remarks
Perceived usefulness				
→ Adoption intention	0.45**	0.14*	0.30**	H1√+H2√: Indirect effect greater than direct effect
Perceived enjoyment				
→ Adoption intention	0.16**	0.11*	0.05*	H1√+H3√: Direct effect greater than indirect effect
Congruence with self-image				
→ Adoption intention	0.38**	0.29**	0.09**	H1√+H5√: Direct effect greater than indirect effect
Perceived ease of use				
→ Attitude toward e-book readers	0.35**	0.03	0.32**	H4c√: Complete mediation of usefulness and enjoyment
Involvement with new ICTs				
→ Perceived ease of use	0.29**	0.15**	0.13**	H6a√+H8a√: Partial mediation of knowledge
→ Perceived usefulness	0.29**	0.04	0.25**	H6b×+H8b√: Complete mediation of knowledge
→ Perceived enjoyment	0.25**	0.15**	0.10**	H6c√+H8c√: Partial mediation of knowledge
→ Congruence with self-image	0.32**	0.21**	0.11**	H6d√+H8d√: Partial mediation of knowledge
Involvement with reading				
→ Perceived ease of use	0.07	0.02	0.06**	H7a×+H9a√: Complete mediation of knowledge
→ Perceived usefulness	-0.05	-0.14**	0.08**	H7b×+H9b√: Suppression effect
→ Perceived enjoyment	-0.02	-0.04	0.02	H7c×+H9c×: No relationship
→ Congruence with self-image	0.08	0.03	0.05**	H7d×+H9d√: Complete mediation of knowledge

Note: Significance levels are based on bias-corrected bootstrap confidence intervals: * $p < 0.05$; ** $p < 0.01$.
 √ = Supported hypothesis; × = rejected hypothesis.

As regards how potential user profile influences perception of adoption drivers (hypotheses H6 and H7), involvement with new ICTs emerges as a major determinant in e-book reader adoption. Although the direct effect on perceived usefulness is not significant (i.e., H6b is not supported), involvement with new ICTs directly and positively affects perceptions concerning ease of use (H6a), enjoyment (H6c), and congruence with self-image (H6d). In contrast, the direct influence of involvement with reading on driver perceptions proves minimal (H7a, H7c, and H7d are rejected) or even negative (the direct effect of involvement with reading on perceived usefulness is negative, contrary to what was hypothesized in H7b).

In order to estimate the mediating effect of knowledge of e-book readers (hypotheses H8 and H9), all the total, direct, and indirect effects (shown in Table 4) of involvement with reading and involvement with new ICTs on perceived ease of use, usefulness, enjoyment, and congruence with self-image were examined. Full support for all H8 subhypotheses was found. In addition to the significant direct effects found (as mentioned above, H6a, H6c, and H7c are supported by the data), involvement with new ICTs indirectly (via greater knowledge) affects perceptions of ease of use (H8a), usefulness (H8b), enjoyment (H8c), and congruence with self-image (H8d). In other words, knowledge mediates the effect of involvement with new ICTs on perceptions of adoption drivers. There is a complete mediating effect in the case of perceived usefulness, meaning that involvement with new ICTs positively affects perceived usefulness, although only because it positively impacts knowledge and perceived ease of use, which in turn affect usefulness.

As generally occurs with direct effects, the indirect influence of involvement with reading on adoption driver evaluation is weaker compared to the influence

of involvement with reading. H9c is rejected and, although H9a, H9b, and H9c are supported, the corresponding effects are small. The most noticeable finding may be the existence of a suppression effect in the relationship between involvement with reading and perceived usefulness (i.e., the combination of direct and indirect effects of opposing signs which, to some extent, cancel each other out). Suppression effects have rarely been explored in organizational and psychological research, even though studying such effects may in fact contribute to theoretical development (Cheung & Lau, 2008). A significant negative direct effect of involvement with reading on perceived usefulness is observed. This finding may be interpreted as evidence that lovers of reading do not tend to consider e-book readers as useful *per se*. In other words, such reading enthusiasts tend to display a kind of inherent rejection toward this new technology, leading them to deny the utilitarian benefits of e-book readers. However, the indirect effect is also significant but positive, possibly indicating that many lovers of reading feel a certain curiosity about these devices and will seek information about them. Being subsequently more informed helps to change their initially negative perception through an awareness that e-book readers are easy to use (H9a) and useful (H9b). It also helps them to perceive that this technology is congruent with their self-image (H9d).

DISCUSSION

While researchers have devoted considerable attention to innovation adoption and diffusion, understanding the adoption of technological innovations remains a challenge for researchers (Venkatesh, 2006). The TAM has been the leading model of a research approach that explains technology adoption on the basis of

individuals' cognitive motivation, this cognitive bias undoubtedly proving to be one of the model's main weaknesses (Bagozzi, 2007; Benbasat & Barki, 2007). Thus, scholars need to complement this model's cognitive perspective by embracing other motivations that are less rational but which also help to explain adoption of technological innovations.

In this sense, the present study integrates the Technology Acceptance Model and the SCT theoretical frameworks to propose and test a model to explain new technology adoption for e-book readers. In the proposed model, it is expected that perceptions concerning the utilitarian and hedonic values of these devices and their congruence with individuals' self-image can determine consumer intention to adopt e-book readers. Additionally, it is posited that consumer profile, defined in terms of their involvement with new ICTs and with reading as well as their awareness and knowledge of the technology, determine both their perception of the technology and its congruence with their self-image.

The empirical findings provide strong evidence to support the proposed integrated theoretical framework of consumer technology acceptance. As posited, in addition to the functional features of a technology, there are hedonic and psychological drivers that influence attitudes and the intention to adopt the technology. Perceived enjoyment and congruence with self-image complement perceived usefulness in developing a favorable attitude toward e-book readers and the intention to adopt and use them. The positive effect of perceived usefulness on attitude confirms the relation suggested in the TAM and supported by a number of researchers. Moreover, in line with more recent works (Bruner & Kumar, 2005; Chtourou & Souiden, 2010; Kulviwat et al., 2007), the positive effect of perceived enjoyment on attitude is confirmed. Finally, as a more innovative contribution to the literature, the positive effect of congruence with self-image on attitudes is consistent with the findings obtained by Kleijnen, Ruyter, and Andreassen (2005) and Cowart, Fox, and Wilson (2008).

The findings reported in the present paper indicate that the perception of this technology not only has a positive effect on attitude but also on adoption intention. Perceived usefulness, enjoyment, and self-image congruence increase the intention to purchase an e-book reader, even if the individual has no clear attitude toward these devices. Moreover, whereas perceived usefulness proves the most relevant determinant of attitude, congruence with self-image has a more direct effect on the intention to purchase e-book readers. Contrary to other works (Bruner & Kumar, 2005; Kulviwat et al., 2007) that showed that attitude completely mediates the effects of perceived usefulness, ease of use, and emotion on adoption intention, data show evidence of a partial mediation of attitude in the model. e-Book reader ease of use emerges as a determinant of perceived usefulness and perceived enjoyment, supporting the idea that the perception of functional and hedonic features *vis-à-vis* a new technology is determined by beliefs concerning its simplicity. However, contrary

to what was hypothesized, the effect of ease of use on attitude is not direct, but is mediated by perceived usefulness and enjoyment. This result is consistent with the findings of Bruner and Kumar (2005), Kulviwat et al. (2007), and Kim and Forsythe (2008).

As regards antecedents of drivers for new product adoption, the effect on the knowledge about e-book readers of an individual being highly involved with ICTs is greater than the effect of being highly involved with reading. Moreover, lovers of new ICTs are much more likely to appreciate the functional, hedonic, and psychological advantages of e-book readers than potential users who are merely lovers of reading but who are not particularly interested in new ICT. Being a new ICT enthusiast directly and indirectly (via greater knowledge) leads to a perception of great ease of use and usefulness, as well as the enjoyment features and self-image congruence associated to owning and using this kind of device. Furthermore, even if they still know little about e-book readers, people highly involved with new ICTs are likely to perceive these devices as easy to use and fun, and congruent with their own image and lifestyle. In clear contrast, reading enthusiasts tend to perceive e-book readers as useless and do not automatically appreciate the benefits thereof, which hampers adoption. However, high involvement with reading leads to a greater knowledge of these devices, which in turn facilitates an appreciation of their benefits and helps overcome initial resistance to the technology. Hence, regardless of the particular consumer profile, knowledge is essential in the adoption process.

Theoretical and Managerial Implications

As regards theoretical implications, this study highlights a new approach to the study of technology adoption by embracing psychological drivers, particularly congruence with self-image. The relevance of self-image congruence in generating a positive attitude toward a new technology and fostering the intention to adopt it has been shown. In the case studied, individuals are driven to buy e-book readers because they are easy to use, efficient, and useful, because they offer advantages over conventional books, and because they can be fun and enjoyable. Yet, individuals are also willing to purchase an e-book reader because they identify with the image of typical users of such devices. As Firat and Venkatesh (1995) states, individuals consume things in order to produce symbols (values, beliefs, images). Therefore, innovation characteristics may act as input in creating an individual's image and as symbols of the values and beliefs they strive to convey.

These findings have important managerial implications concerning the positioning and success of new technologies beyond just e-book readers (e.g., tablets, smartphones, or digital cameras) for which adoption may be driven not only by utilitarian benefits, and which may target both innovative as well as traditional consumers. First, the design of new technologies should, more than ever, strike a perfect balance

between functional and enjoyment features. When individuals perceive a new technology to be useful and enjoyable, their attitude toward it will be more favorable and, consequently they will be more inclined to buy it. Indeed, they will be willing to acquire the new technology even if they have not formed any particular attitude toward it. Moreover, new technologies should be easy, intuitive, and quick to learn if they are to be seen as useful and pleasant.

Second, creating and maintaining a clear link between the new technology and individuals' values and beliefs is essential if individuals are to identify with the technology. Individuals appear more willing to purchase a new technology when they identify with the technology's image. Related communication and advertising should therefore help to forge a clear personality and character for the product, illustrate different situations of use, and position the product close to the values of potential users. Moreover, the new technology's image can help individuals "create" a self-image that they like, to such an extent that there is a close tie between individuals and technology.

Third, this study shows that individuals' profile, that is, their interests and involvement may determine both positive and negative perceptions of a new technology. This is the case for those lovers of reading who evidence no particular interest in new ICTs. However, knowledge and awareness may mitigate negative perceptions and reinforce positive evaluations. Potential users should therefore be provided with ample information about the product in order to help them understand its utility and imagine the possibilities for pleasure and entertainment it may afford.

The managerial implications to emerge from the present study are particularly relevant for the book industry. Marketers should take into account that beyond functionality, hedonic and psychological factors also prove relevant in e-book reader adoption. e-Book readers are still in the early stages of technological development. After the first-generation devices, new-generation e-book readers are improving the utilitarian characteristics (they are lighter, offer better resolution, or advanced e-ink display). However, in order to generate a positive attitude toward these devices, marketers also should highlight the hedonic attributes (such as Internet navigation, audio, text-to-speech feature, apps, etc.) and stress that this technology is fully compatible with the habits and interests of reading enthusiasts. Moreover, potential users will only evaluate e-book readers when they acquire sufficient knowledge and information. Although new ICT lovers are not a difficult target, since this technology matches their self-image and they are able to gauge its hedonic features, lovers of reading need to be drawn through an awareness of the technology and an understanding of its benefits. In this sense, marketers should encourage readers to try out e-book readers, for instance, in educational centers, libraries, or bookshops.

The managerial implications may be extended to other products and industries related to ICTs such as

new devices (tablets, music devices, and other accessories), mobile applications, social networks, or online platforms. In these instances, managers should seek a trade-off between functional and hedonic characteristics so as to meet potential consumer expectations. Moreover, many of these technologies have become elements that can define consumer style. As with other products such as fashion and fashion accessories, certain individuals consider that some devices fit in with their self-image, so they feel at ease "wearing" a tablet, an MP5 player or other accessories, or using software and other applications that match their interests. It is therefore important for firms to adapt the designs, models, and aesthetics to fit consumer styles and trends. Finally, managers should not overlook individuals who are involved with new technologies but who yearn for bygone technologies and who are thus reluctant to change. This can be seen in new technologies such as online education platforms, virtual conferences, professional social networks, or online movies, where online technologies are replacing offline services. As has been shown, additional knowledge is required to overcome consumer reluctance and hesitancy.

Limitations and Further Research

Although these findings make a contribution to the literature, there are some limitations that require further examination and demand additional research. First, the present study focuses on the case of a new technology, e-book readers, still in the early stages of their PLC in the country where the study was performed. It would be advisable to test the model in a context of greater product knowledge in order to evaluate the role of hedonic and functional features as well as the role of attitude in intention to adopt during the subsequent stages of the PLC. It would also be interesting to test how the proposed model helps to explain the usage behavior of those who have already adopted e-readers and whether the relative impact of the adoption drivers on attitudes and behavior differs from those who, as in the sample, evaluate the technology before having used it.

Second, the context of use (leisure, work, learning, etc.) can provoke a bias in the perception of the hedonic versus functional characteristics in the technology. Since the analysis has focused on a context of leisure (reading), it would be interesting to compare the results from different contexts of use, for instance, the use of e-book readers in an educational context. Third, in contrast to previous works that reported total mediation, only partial mediation of attitude in the TAM model was found. These empirical inconsistencies suggest that further research might need to be conducted into the role of attitude in the model. Finally, other obstacles and drivers in the adoption process need to be explored in greater depth. In the case of e-book readers, it would be advisable to consider certain factors such as consumer perceptions regarding the uncertainty surrounding the future development and evolution of the technology in question (Should consumers wait for

improvements in this technology? Are tablets a better substitute?), publisher reluctance to publish e-books, the price of e-books, or the legal issues surrounding access to e-books.

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