



The effect of personal and situational factors on LIS students' and professionals' intentions to use e-books



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ABSTRACT

Due to the growth in both the number and use of e-books, the question arises as to which factors may influence information professionals and library and information science (LIS) students when considering adopting e-books in their organizations. This study uses the technology acceptance model (TAM), a well-known theory for explaining individuals' technology behaviors, and cognitive appraisal theory as theoretical bases from which to predict factors that may influence information professionals and LIS students in their adoption of e-books in their organizations. This study explored two main themes: whether there are differences between information professionals' and LIS students' perspectives towards e-books, and to what extent the TAM, as well as other personal characteristics such as threat, challenge, and motivation, explain information professionals' and LIS students' perspectives. Researchers used questionnaires to gather data on computer competence, attitudes to ebooks, motivation, and cognitive appraisal. Findings reveal that there are major differences between the two groups concerning computer competence, motivation, and challenge. In addition, the TAM, as well as other personal characteristics, can predict the likelihood of e-book adoption, and highlights the importance of individual characteristics when considering technology acceptance.

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1. Introduction

Technological advances have changed individuals' reading experiences and e-books are becoming a popular platform for delivering reading materials. According to the [Pew Research Center \(2012\)](#), digital reading has gone viral and one in five Americans has read an e-book within the past year, whether on an e-reader, tablet, computer, or cellphone. Further, 28% of Americans own at least one device for e-reading. The average reader of e-books read 24 books in the last year, compared with 15 books read by those who read only print. [Vassiliou and Rowley \(2008\)](#) suggest that an e-book is a digital object with traditional book-like characteristics that can be used in an electronic environment, with properties such as: search ability, links, and annotations. The launch of the Kindle, a portable reader, by Amazon in 2008 has caused much interest in e-books and during the Christmas shopping of 2009, its e-book sales outpaced those of printed books ([Allen, 2009, December 28](#)). According to the Association of American Publishers (as cited in [Indvik, 2010, October 15](#)), e-book sales increased by almost 200% in 2010 when compared to 2009; in August, 2012, Amazon.co.uk announced that sales of its Kindle e-books were outstripping sales of printed books ([Malik, 2012, August 5](#)).

2. Problem statement

Due to the growth of both the number and use of e-books, the question arises regarding which factors may influence information professionals and library and information science (LIS) students when considering adopting e-books within their organizations. This question is important because researchers assume that both sectors should be early adopters of new technologies and may serve as gatekeepers to technological innovations. This study seeks to explore whether the LIS community, consisting of information professionals and LIS students, is familiar with these particular technological innovations and whether its members are ready to accept them in their organizations. Do they understand the power of e-books in their information centers? Are they ready to adopt new tools? Although some studies have focused on e-books, none has integrated various sections of the LIS community by focusing on information professionals' and LIS students' intentions to use e-books in workplaces. This aspect is important as recent studies have presented differences between these two professional groups concerning adoption of technological innovations such as: mobile libraries ([Aharony, 2014](#)) and Facebook use ([Aharony, in press](#)). This study uses an extended version of the technology acceptance model (TAM), a well-known theory for explaining individuals' technology behaviors ([Davis, 1989; Morris & Venkatesh, 2000](#)). One criticism of the TAM is that it focuses mainly on cognition and neglects the influence of emotion on technology adoption ([Kulviwat, Bruner, Kumar, Nasco,](#)

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& Clark, 2007). Therefore, the current research includes external variables that can be considered as the bridge between internal beliefs, attitudes, and intentions mentioned in the TAM, and individual differences that may affect users' technology acceptance behavior (Davis, Bagozzi, & Warshaw, 1989). The external variables used in the present study are the characteristics of threat and challenge that are part of Cognitive Appraisal Theory (Lazarus & Folkman, 1984), and the emotional aspect of motivation. The objectives of this study were to examine: (a) if there are differences between information professionals' and LIS students' intentions to use e-books, (b) to what extent does the TAM explain information professionals' and LIS students' intentions to use e-books, (c) to what extent do characteristics such as cognitive appraisals explain information professionals' and LIS students' intentions to use e-books, and (d) to what extent do differences in computer competence and motivation explain information professionals' and LIS students' intentions to use e-books. The research may contribute to the theoretical understanding of variables that influence information professionals' and LIS students' intentions to use e-books and may lead to further inquiry in this field.

3. Literature review

3.1. Adoption and use of e-books

Several studies have considered e-book readers. van der Velde and Ernst (2009) claim that e-books are still in their infancy and that people should get accustomed to them. Chen (2003) found that readers prefer printed books for reading and study and e-books for pleasure and navigation. Other researchers (Brown, 2001; Burk, 2001) explored the advantages and disadvantages of e-book readers. Focusing on factors which cause users to use e-book readers, Lai and Chang (2011) suggested that convenience, compatibility, and media richness contribute to e-book reader acceptance.

Other studies were conducted that concentrated on students' perceptions towards e-books. Clark, Goodwin, Samuelson, and Cocker (2008) assessed user perceptions and use of the Kindle via focus groups in an academic environment. In another study, Clark (2009) delved into the assimilation of an e-book lending program at a university library. Shepperd, Grace, and Koch (2008) found that 90% of students preferred printed textbooks to electronic books, even though they were more expensive. A similar result was found by Woody, Daniel, and Baker (2010), who noted that students preferred printed books over e-books for learning. Another aspect of such research was presented by Pattuelli and Rabina (2010), who investigated Kindle use among library and information science students and found that the portability of the device and its convenience of use enhanced students' reading experience. Therefore, it seems that there is no overall agreement concerning e-book adoption.

3.2. TAM

The technology acceptance model (TAM) is a well-known model for predicting information systems use (McGill & Bax, 2007). It was created by Davis (1989) and grounded in the theory of reasoned action (TRA) (Fishbein & Ajzen, 1975). According to the TRA, an individual's behavior is associated with his beliefs, attitudes, and intentions to perform that behavior. Thus, these factors affect an individual's intention to perform a certain action. The TAM refines the TRA and focuses on two main variables: perceived usefulness (PU) and perceived ease of use (PEOU) as factors that influence one's attitude towards using a certain technology. Perceived usefulness is regarded as the degree to which an individual believes that using a particular technology would enhance his or her job performance (Davis, 1989). Perceived ease of use addresses the degree to which a person assumes that using a certain technology would be free of effort. Davis proposes that these two factors may predict an individual's information technology acceptance. According to Davis,

one's acceptance of an information technology depends on beliefs about the usefulness and ease of use of the technology, which in turn influence attitudes and intentions towards using a certain technology.

Numerous studies have examined the TAM. Several meta-analyses (King & He, 2006; Ma & Liu, 2004) and review articles (Legris, Ingham, & Colletette, 2003; Turner, Kitchenham, Brereton, Charters, & Bugden, 2010) have addressed the importance of the model for understanding the process of information technology (IT) acceptance. Some have focused on users' acceptance of e-mail, word processing, the web, and instant messaging (Davis, 1989; Davis et al., 1989; Davis & Venkatesh, 1996). Others explored the TAM in corporate environments (Gefen & Straub, 1997; Igbaria, Gumaraes, & Davis, 1995) and in web shopping (Chang, Kim, & Oh, 2002; Koo, 2003). In education, the TAM was used to examine students' attitudes towards e-learning acceptance (Park, 2009; Park, Nam, & Park, 2008), and towards m-learning (Aharony, 2012; Jairak, Praneetpolgrang, & Mekhabunchakij, 2009). Several studies examined the model within the library arena and, in particular, applied it to acceptance of digital libraries (Park, Roman, Lee, & Chung, 2009; Thong, Hong, & Tam, 2002). Others investigated the LIS community perspectives of technological innovations in their workplaces (Aharony, 2014, *in press*). This study explores the TAM in a new context: LIS community and e-books.

3.3. Personal innovativeness

Another variable that may predict respondents' intentions to use e-books is personal innovativeness, a construct that potentially affects how people respond to innovations (Jeong, Yoo, & Heo, 2009). Personal innovativeness is a well-known concept in innovation diffusion research in general (Agarwal & Prasad, 1998; Lu, Yao, & Yu, 2005), and especially in the domain of marketing (Midgley & Dowling, 1978; Flynn & Goldsmith, 1996). Agarwal and Prasad (1998) suggested that personal innovativeness is a construct that may help identify individuals who would adopt technology innovations earlier than others. They also coined the term PIIT (personal innovativeness in the domain of information technology) and defined it as the willingness of individuals to try out any new information technology. According to Agarwal & Prasad, PIIT is considered as a relatively stable descriptor of individuals across various situations.

3.4. Cognitive appraisal: threat and challenge

Lazarus and Folkman (1984) defined cognitive appraisal as the individual's judgment of an event or situation with respect to its significance for well-being. Threat and challenge appraisals occur when dealing with stressful situations. The individual assesses the demands of the environment (primary appraisal), and then makes a decision concerning his or her resources that can be applied to the situation (secondary appraisal). These two appraisals determine whether people assess the situation as a threat or a challenge (Blascovich & Tomaka, 1996; Lazarus & Folkman, 1984). If the individual assumes that his or her personal resources are not sufficient, the situation is appraised as a threat because of the potential for harm or loss. Threat is typically associated with negative affect and limited focus (Blascovich, 2008). On the other hand, if the individual assumes that his or her resources are sufficient to meet the demands of the situation, the situation is appraised as a challenge, and the potential for gain, mastery, or growth is recognized. Challenge is usually associated with better performance and positive affect (Blascovich, Mendes, & Seery, 2002; Blascovich & Mendes, 2000). Blascovich (2008) adds that these evaluations take place in motivated performance situations such as exams, speech giving, sport competitions, and when individuals are engaged in a task. Studies in psychology have found that challenge appraisal encourages performance and threat appraisal blocks it (Seery, Weisbuch, Hetenyi, & Blascovich, 2010). Several studies that focused on the threat and challenge variables were carried out in the Library and Information Science

environment as well (Aharony, 2009, 2011). It should be mentioned that although the phenomenon of e-books is common in North America, it is not so common or popular in Israel (where the studies were carried out), thus the researcher's assumption was that e-readers' usage may cause stress or threat among the study's participants.

3.5. Motivation

Another variable that may influence people's behavioral intention to use e-books is their motivation. Deci and Ryan (1985) presented the self-determination theory (SDT), which is a macro-theory of human motivation concerned with the development and functioning of personality within social contexts. In order for individuals to be perceived as "healthy," they should present high levels of autonomy, competence, and relatedness (Deci & Ryan, 2008). According to the SDT, if individuals' needs are satisfied, they will present optimal motivation and well-being; and, on the contrary, when needs are thwarted they will present low motivation and well-being. Mitchell (1982) suggested that motivation is a psychological process that causes arousal, direction, and persistence of behavior. Motivation has been identified as a major factor of general behavior (Deci & Ryan, 1987), information technology acceptance behavior (Davis, Bagozzi, & Warshaw, 1992; Moon & Kim, 2001; Venkatesh & Speier, 1999), and work-related behavior (George & Brief, 1996; Lu, 1999). The reasons for adopting a specific behavior differ from one person to another, and are actually associated with an individual's attitudes, goals, and needs.

3.6. Demographic variables

An additional aspect to be considered is participants' age. This variable has already been found to influence LIS students', as well as practitioners', intentions to use novel technologies in their workplaces. A previous study showed that LIS students who were younger than information professionals perceived Facebook as easier to use in their workplace. In addition they found it more enjoyable, and used Facebook more often than the information professionals (Aharony, in press). Furthermore, in another study, researchers found out that LIS students who were younger than information professionals had higher levels of perceived ease of use of and usefulness of mobile technology than information professionals (Aharony, 2014).

4. Hypotheses

Assuming that PEOU, PU, personal innovativeness, cognitive appraisal, and motivation may predict information professionals' and LIS students' behavioral intention to use e-books, the following hypotheses can be made:

- H1.** LIS students will have higher intentions to use e-books, as measured by PEOU scores, than information professionals.
- H2.** LIS students will have higher intentions to use e-books, as measured by PU scores, than information professionals.
- H3.** LIS students will have higher personal innovativeness scores than those of information professionals.
- H4.** LIS students will have lower threat scores and higher challenge scores than those of information professionals.
- H5.** LIS students will have higher intentions to use e-books than information professionals.
- H6.** LIS students will score higher on motivation to use e-books than information professionals.

H7. LIS students' computer competence scores will be higher than those of information professionals.

H8. High scores in respondents' PEOU, PU, and personal innovativeness will be associated with high scores in their behavioral intention to use e-books.

H9. Low scores in respondents' threat appraisal and high scores in respondents' challenge appraisal will be associated with high scores in their behavioral intention to use e-books.

H10. High scores in respondents' motivation will be associated with high scores in their behavioral intention to use e-books.

H11. High scores in respondents' computer competence will be associated with high scores in their behavioral intention to use e-books.

Fig. 1 proposes a model for H₈–H₁₁.

5. Instruments and measures

5.1. Data collection

The research was conducted in Israel during the first semester of the 2013 academic year and encompassed two groups of participants: information professionals and LIS students. The researchers sent a message and a questionnaire to an Israeli library and information science discussion group of mostly public and academic librarians and to an Israeli information specialist group which works mostly in the private sector. The message explained the study's purpose and asked group members to complete the questionnaire. These two discussion groups encompass about 900 members; 169 responses were received, giving a reply percentage of 18.77%. As for LIS students, there are approximately 800 enrolled nationwide. Researchers received permission to enter different courses in a prominent LIS department that prepares students to become school, public, and academic librarians, as well as other types of information professionals. Researchers delivered 200 questionnaires to the students and explained the study purpose. Of this group, 132 responded (66.00%). This research therefore had a total of 301 respondents.

5.2. Data analysis

Of the information professionals, 48 (28.40%) were male and 121 (71.60%) were female. Among LIS students, 48 (36.40%) were male and 84 (63.60%) were female. For the entire sample, 96 respondents (31.90%) were male and 205 (68.10%) were female. The information professionals' average age was 46, while that of the LIS students was 31. In order to examine differences among the two groups concerning gender and age, a T-test was conducted that showed a significant difference between the two groups regarding age, $F(1,298) = 169.94, p > .05, \eta^2 = .36$. Results show that information professionals' ages ($M = 45.74, SD = 9.94$), were higher than students' ages ($M = 31.15, SD = 9.17$).

5.3. Measures

Researchers used questionnaires with five sections to gather data: personal details, computer competence, intentions to use e-books, motivation, and a cognitive appraisal (Appendix A). The personal details section had two statements. The computer competence section consisted of 5 statements rated on a 5-point Likert scale (1 = strongest disagreement; 5 = strongest agreement).

The e-books attitude section, based on Liu, Li, and Carlsson (2010), TAM questionnaire for M-learning was modified for this study and consisted of 13 statements rated on a 7-point Likert scale (1 = strongest disagreement; 7 = strongest agreement). A principal components factor analysis using varimax rotation with Kaiser normalization was

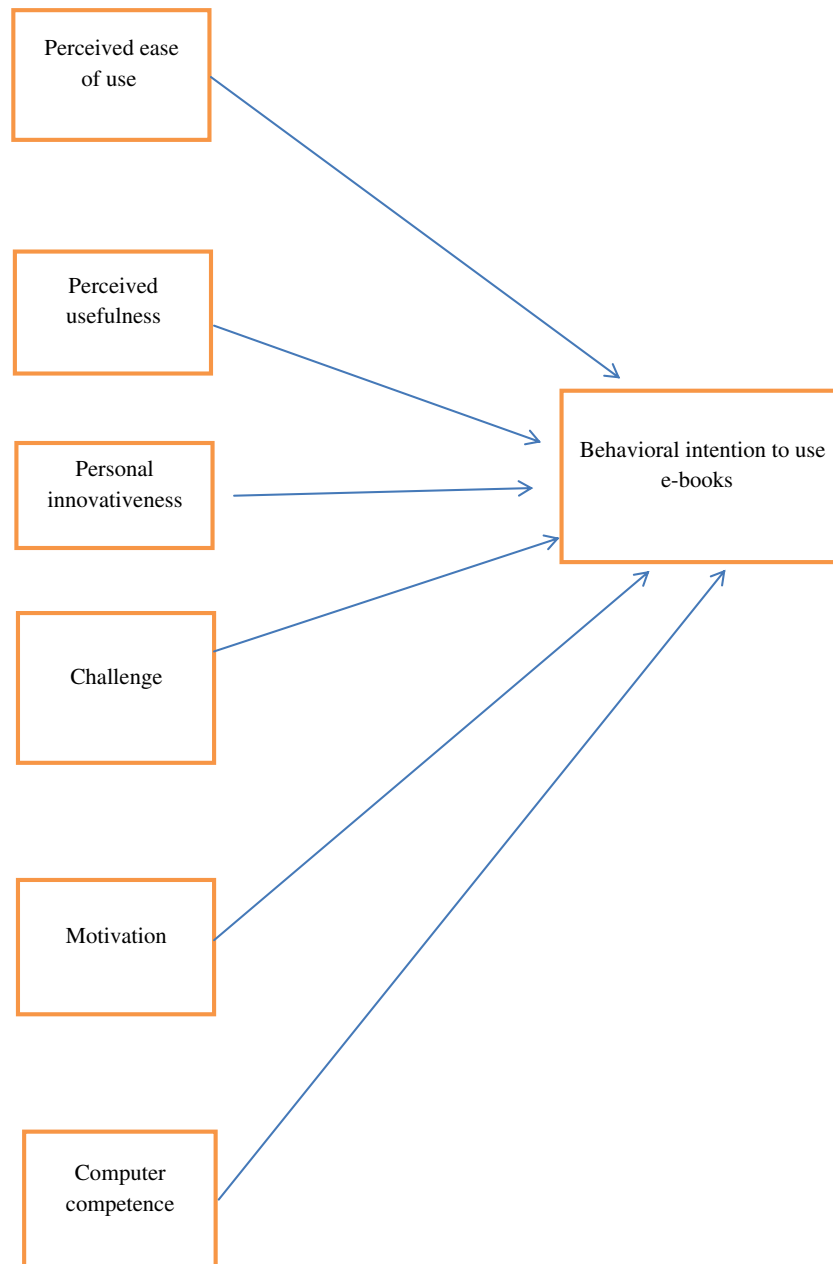


Fig. 1. Research model.

done and explained 60% of the variance. Principal components factor analysis revealed four distinct factors. The first was related to information professionals' behavioral intention to use e-books (items 3, 5, 7, 11); the second was related to information professionals' perceptions about e-books' ease of use (items 1, 8, 10); the third was related to information professionals' personal innovativeness (items 4, 6, 9); and the fourth was related to information professionals' perceptions about e-book usefulness (items 2, 12, 13). The values of Cronbach's alpha were .82, .84, .83, and .70 respectively.

The motivation questionnaire, based on the Coach Motivation Scale (CMS; Frederick & Morrison, 1999), was modified for this study. The CMS was developed on the principles of the self-determination theory (Deci & Ryan, 1985) and differentiates between intrinsic and extrinsic coaching motives. The current questionnaire consisted of 14 statements rated on a 7-point Likert scale (1 = strongest disagreement; 7 = strongest agreement). Principal components factor analysis revealed two distinct factors.

The first was related to intrinsic motivation (items 1, 5, 6, 8, 9, 12, and 13) and the second was related to extrinsic motivation (items 2, 3, 4, 7, 11, 12, and 14). The values of Cronbach's alpha were .93 and .84, respectively. A Pearson correlation conducted in order to find the relationship between the two factors found a high, significant positive correlation ($r = .67, p < .001$) between them. Therefore, during analysis, the researchers referred to it as a single measure of motivation.

The cognitive appraisal questionnaire measured information professionals' feelings of threat versus challenge when confronted with new situations. It consisted of 10 statements rated on a 6-point scale (1 = fully disagree; 6 = fully agree). This questionnaire was used in previous studies (Aharony, 2009, 2011; Yekutieli, 1990) and consisted of two factors: threat (items 1, 2, 3, 5, 7, and 8) and challenge (items 4, 6, 9, and 10). Cronbach's alpha was .86 for the threat factor and .58 for the challenge factor. Table 1 presents the different questionnaires used in the study.

Table 1
Study questionnaires.

Name of questionnaire	Number of items	Number of scales	Cronbach's alpha
1. Personal details	2		
2. Computer competence	5	5	
3. E-books attitude	13	7	.82, .84, .83, .70
4. Motivation	14	7	.93, .84
5. Cognitive appraisal	10	6	.86, .58

6. Results

In order to examine whether there are differences between the two groups concerning work with computers (computer competence and motivation), cognitive appraisal (threat and challenge), and variables related to the TAM (PU, PEOU, personal innovativeness, and behavioral intention) a series of one-way MANOVA was performed. The MANOVA revealed a significant difference between the two groups concerning computer competence and motivation ($F(2,299) = 4.91, p < .01, \eta^2 = .03$). Means, standard deviations, and the MANOVA analysis for each group are presented in Table 2.

Univariate ANOVA revealed significant differences between the two groups concerning the two measures. It seems that students' computer competence is higher than information professionals'. However, the motivation of information professionals is higher than that of students.

In order to examine whether there are differences between the two groups concerning cognitive appraisal, PU, PEOU, personal innovativeness and behavioral intention to use e-books, a MANOVA was performed. The MANOVA did not reveal a significant difference between the two groups concerning PU, PEOU, personal innovativeness and behavioral intention to use e-books, $F(6,295) = 1.28, p > .05$. Yet, the MANOVA performed on each measure separately revealed a significant difference between the two groups regarding challenge appraisal, $F(1,300) = 4.81, p < .05, \eta^2 = .03$. It seems that information professionals' level of challenge, $M = 3.50, SD = 1.31$, is higher than that of LIS students', $M = 3.17, SD = 1.27$.

Pearson correlations were performed to examine the relationship between computer competence, motivation, threat appraisal, challenge appraisal, PU, PEOU, personal innovativeness, and the dependent variable of behavioral intention to use e-books (Table 3).

Table 3 shows significant correlations between computer competence, motivation, and behavioral intention to use e-books. The more computer competence and motivation respondents have, the greater their behavioral intentions to use e-books. Significant correlations were also found between computer competence and threat appraisal, personal innovativeness, and PEOU. The correlation with threat appraisal is negative and other correlations are positive. Thus, respondents who have higher computer competencies perceive e-book usage as less threatening, more innovative, and easier to use. Moreover, significant positive correlations were also found between motivation and challenge appraisal, PU and personal innovativeness. It seems that the higher the respondents' motivation is, the more challenged and personally innovative they are, and the more highly they regard the usefulness of e-books. Table 3 also shows significant correlations between threat appraisal, challenge appraisal, PU, PEOU, personal innovativeness and respondents' behavioral intention to use e-books. All correlations are positive, except for the correlation between threat appraisal and

intention. Hence, the higher the respondents' challenge appraisal, PU, PEOU, and personal innovativeness; and the lower their threat appraisal, the greater their behavioral intention to use e-books. Table 3 also shows that negative correlations were found between threat appraisal and PU, PEOU and personal innovativeness; positive correlations were found between challenge appraisal and PU, and personal innovativeness. The lower the threat appraisal and the higher the challenge appraisal, the greater are PU and personal innovativeness. Further, the more respondents appraise the situation as a threat, the lower their PEOU. Positive correlations were also found between PU, personal innovativeness, and PEOU. Participants who have higher perspectives of e-book usefulness are more personally innovative and also have more positive perspectives on e-books' ease of use. In addition, participants who are more innovative have higher regard for the ease of use of e-books.

A hierarchical regression was conducted using behavioral intention to use e-books as a dependent variable. The predictors were entered as six steps:

1. Research two groups: information professionals and LIS students.
2. Cognitive appraisal variables: threat and challenge.
3. Computer competence and motivation.
4. Personal innovation and PEOU.
5. PU.
6. Interactions between the two research groups and research variables.

In the regression analysis, the entrance of the first five steps was forced, while that of the interactions was done according to their contribution to the explained variance. The regression analysis showed that there was not any significant contribution of the interactions to the explained variance of behavioral intention to use e-books, thus, Table 3 presents only the first five steps. The regression explained 68% of the behavioral intention to use e-books. Table 4 presents the standardized and unstandardized coefficients of the hierarchical regression of respondents' behavioral intention to use e-books.

Examining the first step reveals that the research group variable (information professionals and LIS students) did not contribute significantly to the explained variance. The second step introduced the cognitive appraisal variable (challenge and threat), that contributed significantly by adding 27% to the explained variance of the behavioral intention to use e-books. The beta coefficients of the two variables were significant: that of threat was negative and that of challenge was positive. In other words, the more respondents appraise the situation as a threat, the lower their behavioral intention to use e-books; and the more respondents appraise the situation as a challenge, the higher their behavioral intention to use e-books. The third step introduced two variables associated with computer usage: computer competence and motivation. These variables added 8% to the explained variance of behavioral intention to use e-books. The beta coefficient was positive: respondents, who make greater use of computers and who are more motivated to work with computers, appear to have a higher behavioral intention to use e-books. The inclusion of this step caused a decrease in the β size of the challenge appraisal. A Sobel test indicated that motivation mediates between challenge appraisal and behavioral intention to use e-books ($z = 5.57, p < .001$). Hence, the more respondents perceive e-books as challenging, the more they are motivated and the higher their intention to use them.

Table 2
Means and standard deviations of respondents' computer competence and motivation.

Measures	Information professionals		Students		F (1, 300)	Eta ²
	M	SD	M	SD		
Competence	4.48	.58	4.64	.50	6.05*	.02
Motivation	4.42	1.24	4.11	1.13	3.99*	.01

* $p < .05$.

Table 3

Pearson correlations between computer competence, motivation, threat, challenge, PU, PEOU, personal innovativeness, and behavioral intention to use e-books (n = 301).

Measures	Competence	Motivation	Threat	Challenge	PU	Innovative	PEOU	Intention
<i>Competence</i>								
Motivation								
Threat	-.27***	-.01						
Challenge	-.04	.57***	.18**					
PU	.14	.56***	-.28***	.45***				
Innovative	.34**	.33***	-.30***	.20***	.51***			
PEOU	.38***	.07	-.50***	-.03	.33***	.51***		
Intention	.21***	.44***	-.35***	.31***	.79***	.51***	.44***	

Note.
 ** p < .01.
 *** p < .001.

The fourth step added respondents' perceptions about their personal innovativeness and PEOU and also contributed significantly by adding 8% to the explained variance of behavioral intention to use e-books. The beta coefficients were positive; it appears that the more respondents perceived themselves as personally innovative and e-books as easy to use, the greater their behavioral intention to use them. As the fifth step, researchers added perceptions about e-book usefulness, which added 22% to the explained variance of behavioral intention to use e-books. The beta coefficient was positive, suggesting that the more respondents perceived e-books as useful, the greater their behavioral intention to use them. Note that in this step there was a decrease in the β size of motivation, personal innovativeness, and PEOU. A Sobel test indicated that usefulness mediates between motivation and behavioral intention to use e-books ($z = 10.12, p < .001$), between personal innovativeness and behavioral intention to use e-books ($z = 9.06, p < .001$), as well as between PEOU and behavioral intention to use e-books ($z = 5.98, p < .001$). Hence, the more respondents are motivated and personally innovative, and the more they perceive e-books' ease of use, the higher their PU; and, as a result, the higher their behavioral intention to use e-books.

Table 4
 Hierarchical regression coefficients of respondents' behavioral intention to use e-books (n = 301).

Predictors	B	β	R ²	ΔR^2
1. Groups	.14	.06	.01	.01
2. Group	.01	.00	.28***	.27***
Threat	-.55	-.43***		
Challenge	.33	.39***		
3. Group	.03	.01	.36***	.08***
Threat	-.45	-.34***		
Challenge	.16	.19**		
Competence	.28	.14**		
Motivation	.30	.33***		
4. Group	.00	.00		
Threat	-.26	-.20***		
Challenge	.14	.17**		
Competence	.04	.02		
Motivation	.24	.26***		
Personal innovation	.17	.20***		
PEOU	.28	.21***		
5. Group	.08	.03	.67***	.22***
Threat	-.09	-.07		
Challenge	-.00	-.00		
Competence	.08	.04		
Motivation	.03	.03		
Personal innovation	.02	.03		
PEOU	.18	.14**		
PU	.63	.68***		

Note.
 ** p < .01.
 *** p < .001.

7. Discussion

This study explored two main themes: whether there are differences between information professionals' and LIS students' intentions to use e-books; and to what extent the TAM, as well as other characteristics such as threat and challenge appraisals, and motivation, explains information professionals' and LIS students' intentions to use e-books. The first of these two themes refers to differences between the two groups and addresses the first seven hypotheses. Only one (H₇) out of these hypotheses was accepted. It seems that LIS students' computer competence scores are higher than that of information professionals. These findings are not surprising and echo previous studies. In the current study, LIS students are younger than information professionals, and the literature suggests that computer skills are more easily learned by younger persons (Czara, Hammond, Blascovich, & Swede, 1989). Moreover, younger people usually possess greater experience with the Internet, while older people may have more difficulties with it (Morris & Venkatesh, 2000; Trocchia & Janda, 2000).

H₆ was rejected, as it was found that information professionals' scores of motivation to use e-books are higher than those of LIS students. This finding is interesting because researchers assumed that younger participants would have higher motivations to use e-books than older ones. However, it can be associated with a further intriguing finding that information professionals who are older appraise the situation of adopting e-books as more challenging than do the younger students. We may explain this as follows: Perhaps information professionals, who are more experienced, understand that in order to survive and to continue taking a major part in the dynamic and changing information world they should be more motivated and challenged to adopt new technologies, thus proving that they are still relevant and up-to date.

Other hypotheses (H₁, H₂, H₃, and H₅), associated with differences between the two groups and concerned the TAM, were also rejected. Generally, it seems that there are no differences concerning e-book acceptance between these two professional groups. Further details and analysis of this finding will be introduced below in the discussion of the TAM hypotheses.

H₄ addressed the cognitive appraisal variable and was rejected. Yet, it did present a difference between the two research groups. It was surprising to find that LIS students did not have lower scores in threat appraisal (see the previous discussion about their ages) and higher scores in challenge appraisal than information professionals. However, as was mentioned, it was interesting to find that information professionals who are older appraise the situation of adopting e-books as more challenging than younger students. To conclude, the first issue of the study reveals that there are no major differences between the two research groups. Yet, it seems that information professionals better understand the constant, dynamic change that the information world is undergoing than do LIS students; and they are motivated and challenged to use the latest technologies to improve their work and serve users by the most current means.

The second theme concerns the TAM and other characteristics. H_8 addressed the TAM and was accepted. The findings suggest that high scores in PEOU, PU, and in personal innovativeness are associated with high scores in respondents' intention to adopt e-books in their organizations. These results can be associated with previous studies noting that PEOU, PU, and personal innovativeness affect the intention to use information technology (Agarwal & Prasad, 1998; Aharony, in press Al-Gahtani, 2001; Rose & Straub, 1998; Serenko, 2008). In this case, the hypothesis refers to the entire research population, which presents the attitudes of the different sectors of the LIS community. We can conclude that those information professionals and LIS students who would like to take advantage of a new technology, and who perceive e-books as easy to use and able to improve their work, intend to use e-books in their organizations. However, the regression analysis showed that the effect of PU was greater than that of PEOU (22%) and that of personal innovativeness (8%). This finding was already noted in other research (Gefen, Karahanna, & Straub, 2003; Straub, Limayem, & Karahanna-Evaristo, 1995) and indicates that both information professionals and LIS students will adopt e-books if they are convinced that such usage is beneficial to them and their organizations, and that it will improve their productivity within their workplaces. In addition, both sectors intend to use e-books if they find them easy to use and not requiring a great deal of effort. As these results emphasize that respondents who are more innovative have higher intentions to use e-books, they also suggest that such individuals understand the importance and contribution of technological innovations, and that they are technology-adventurous and ready to experience new technological changes and bring fresh perspectives to their organizations.

The next hypothesis (H_9) considered the cognitive appraisal variable and was also confirmed. The findings revealed that low scores in threat appraisal and high scores in challenge appraisal are associated with high scores in behavioral intention to use e-books. It seems that respondents who anticipate failure or negative evaluation when coping with new technological devices have lower intentions to use e-books. On the other hand, those respondents who appraise the adoption of e-books as challenging, and who were also found to be more motivated to use e-books, are characterized by higher expectations and perceptions of e-books that will eventually lead to higher intentions to use them. Therefore, it is likely that both sectors will ultimately be more familiar with e-books and new technological devices, in hopes that such exposure will reduce the level of threat and, as a result, they will be more challenged to try and use them.

The last two hypotheses (H_{10} , and H_{11}), focused on computer competence and motivation, were also confirmed. H_{10} asserted that high scores in motivation would be associated with high scores in behavioral intention to use e-books. These results are not unexpected and concur with previous studies that emphasized motivation as a crucial factor of both general behavior (Deci & Ryan, 1987), and information technology acceptance behavior (Davis et al., 1992; Venkatesh & Speier, 1999). Results pertaining to the last hypothesis (H_{11}) show that high respondents' computer competence scores are associated with high respondents' behavioral intention to use e-books. It seems that the more computer savvy participants are, the higher their behavioral intention to use e-books. They have probably considered the advantages and disadvantages of further use of technological innovations and have come to the conclusion that it is better to experience, master, and assimilate new technologies, such as e-books, within their organizations. Previous results indicated that LIS students' computer skills are greater than those of information professionals.

This study has several limitations. The first is that the current study focused only on the Israeli LIS community. The researchers suggest that if an international LIS perspective towards e-books is to be achieved, the study should be conducted in other countries as well. Moreover, future studies may include further variables in the TAM in order to gain a thorough understanding of its significance. In addition the fact that the study relies only upon self-reported data may influence

research's results. Researchers assume that further study focusing on actual adoption of e-books would help to confirm results. Finally, a future study may also use qualitative methods, such as open questions or interviews, to supplement the quantitative analysis and thereby enrich the findings by adding other dimensions to the inquiry process.

8. Conclusion

This article makes a number of theoretical and practical contributions. It expands the scope of research about the TAM by examining it within the context of e-books, focusing on different perspectives of the LIS community. In addition, it confirms that the TAM, as well as other characteristics, significantly predicts the likelihood of e-book adoption and it also highlights the importance of further characteristics when considering technology acceptance. Moreover, the study suggests that there are differences between the two groups concerning computer competence, motivation, and challenge. It is likely that that greater exposure to and experience with e-books may change and improve LIS students' attitudes towards this technology, and that the resulting higher level of computer skills will also improve information professionals' intentions to use e-books. Finally, assuming that using technology in information organizations may improve work results, the researchers suggest that directors of information organizations and LIS departments would be wise to be familiar with both the TAM and with the issues of computer skills and other characteristics when recruiting new employees or accepting new students.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <http://dx.doi.org/10.1016/j.lisr.2014.01.001>.

References

- Agarwal, R., & Prasad, J. (1998). A conceptual and operational definition of personal innovativeness in the domain of information technology. *Information Systems Research*, 9(2), 204–215.
- Aharony, N. (2009). Web 2.0 use by librarians. *Library & Information Science Research*, 31, 29–37.
- Aharony, N. (2011). Librarians' attitudes towards knowledge management. *College and Research Libraries*, 72(2), 111–126.
- Aharony, N. (2012). LIS students' perceptions of m-learning. *Journal of Librarianship and Information Science* (in press).
- Aharony, N. (2014). Mobile libraries: Librarians' and students' perspectives. *College and Research Libraries*, 75, 202–217.
- Aharony, N. (2014). Factors affecting adoption of Facebook: An exploratory study of the LIS community perspective in Israel. *College and Research Libraries* (in press).
- Al-Gahtani, S. (2001). The applicability of TAM outside North America: An empirical test in the United Kingdom. *Information Resources Management Journal*, 14(3), 37–46.
- Allen, K. (2009, December 28). Amazon e-book sales overtake print for the first time. The Guardian. Retrieved from: www.guardian.co.uk/business/2009/dec/28/amazon-ebook-kindle-sales-surge.
- Blascovich, J. (2008). Challenge and threat. In A. J. Elliott (Ed.), *Handbook of approach and avoidance motivation* (pp. 431–445). New York, NY: Psychology Press.
- Blascovich, J., & Mendes, W. B. (2000). Challenge and threat appraisals: The role of affective cues. In J. P. Forgas (Ed.), *Feeling and thinking: The role of affect in social cognition* (pp. 59–82). New York, NY: Cambridge University Press.
- Blascovich, J., Mendes, W. B., & Seery, M. (2002). Intergroup threat: A multi-method approach. In D. M. Mackie & E. R. Smith (Eds.), *From prejudice to intergroup emotions: Differentiated reactions to social groups* (pp. 89–109). New York, NY: Psychology Press.
- Blascovich, J., & Tomaka, J. (1996). The biopsychosocial model of arousal regulation. *Advances in Experimental Social Psychology*, 28, 1–51.
- Brown, G. (2001). Beyond print: Reading digitally. *Library Hi Tech*, 19, 390–399.
- Burk, R. (2001). E-book devices and the marketplace: In search of customers. *Library Hi Tech*, 19, 325–331.
- Chang, H. S., Kim, J. K., & Oh, C. G. (2002). Technology acceptance model with web interactivity. *Journal of MIS Research*, 12(4), 55–75.
- Chen, Y. (2003). Application and development of electronic books in an e-Gutenberg age. *Online Information Review*, 27, 8–16.
- Clark, D. (2009). Lending Kindle e-book readers: First results from the Texas A&M University project. *Collection Building*, 28(4), 146–149. <http://dx.doi.org/10.1108/01604950910999774>.
- Clark, D. T., Goodwin, S. P., Samuelson, T., & Cocker, C. (2008). A qualitative assessment of the Kindle e-book reader: Results from initial focus groups. *Performance Measurement and Metrics*, 9(2), 118–129.

- Czara, S. J., Hammond, K., Blascovich, J. J., & Swede, H. (1989). Age related differences in learning to use a text-editing system. *Behaviour & Information Technology*, 8(4), 309–319.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13, 319–339.
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35, 982–1003.
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1992). Extrinsic and intrinsic motivation to use computers in the workplace. *Journal of Applied Social Psychology*, 22, 1111–1132.
- Davis, F. D., & Venkatesh, V. (1996). A critical assessment of potential measurement biases in the technology acceptance model: Three experiments. *International Journal of Human Computer Studies*, 45(1), 19–45.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York, NY: Plenum.
- Deci, E. L., & Ryan, R. M. (1987). The support of autonomy and the control of behavior. *Journal of Personality and Social Psychology*, 53(6), 1024–1037.
- Deci, E. L., & Ryan, R. M. (2008). Favoriser la motivation optimale et la santé mentale dans les divers milieux de vie. *Canadian Psychology*, 49, 14–23.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley Publishing Company.
- Flynn, L. R., & Goldsmith, R. E. (1993). A validation of Goldsmith and Hofacker innovativeness scale. *Educational and Psychological Measurement*, 53, 1105–1116.
- Flynn, L. R., Goldsmith, R. E., & Eastman, J. K. (1996). Opinion leaders and opinion seekers: Two new measurement scales. *Journal of the Academy of Marketing Science*, 24, 137–147.
- Frederick, C. M., & Morrison, C. S. (1999). Collegiate coaches: An examination of motivation style and its relationship to decision making and personality. *Journal of Sport Behavior*, 22, 221–233.
- Gefen, D., Karahanna, E., & Straub, D. W. (2003). Trust and TAM in online shopping: An integrated model. *MIS Quarterly*, 27, 51–90.
- Gefen, D., & Straub, D. W. (1997). Gender differences in perception and adoption of e-mail: An extension to the technology acceptance model. *MIS Quarterly*, 21, 389–400.
- George, J. M., & Brief, A. P. (1996). Motivational agendas in the workplace: The effects of feelings on focus of attention and work motivation. *Research in Organizational Behavior*, 18, 75–109.
- Igbaria, M., Gumaraes, T., & Davis, G. B. (1995). Testing the determinants of microcomputer usage via structural equation model. *Journal of Management Information Systems*, 11(4), 87–114.
- Indvik, L. (2010, October 15). E-book sales up 193% so far this year. Retrieved from <http://mashable.com/2010/10/15/e-book-sales-august-2010/>
- Jairak, K., Praneetpolgrang, P., & Mekhabunchakij, M. (2009). *An acceptance of mobile learning for higher education students in Thailand*. International Journal of the Computer, the Internet and Management 17(SP3), 36.1–36.8.
- Jeong, N., Yoo, Y., & Heo, T. (2009). Moderating effect of personal innovativeness on mobile-RFID services: Based on Warshaw's purchase intention model. *Technological Forecasting and Social Change*, 76, 154–164.
- King, W. R., & He, J. (2006). A meta-analysis of the technology acceptance model. *Information Management*, 43, 740–755.
- Koo, D. M. (2003). An investigation on consumer's internet shopping behavior explained by the technology acceptance model. *Journal of MIS Research*, 13(1), 141–170.
- Kulviwat, S., Bruner, G. C., Kumar, A., Nasco, N. A., & Clark, T. (2007). Towards a unified theory of consumer acceptance technology. *Psychology and Marketing*, 24(12), 1059–1084.
- Lai, J., & Chang, C. (2011). User attitudes toward dedicated e-book readers for reading: The effects of convenience, compatibility and media richness. *Online Information Review*, 35, 558–580.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York, NY: Springer.
- Legris, P., Ingham, J., & Colletette, P. (2003). Why do people use information technology? A critical review of the technology acceptance model. *Information Management*, 40, 191–204.
- Liu, Y., Li, H., & Carlsson, C. (2010). Factors driving the adoption of m-learning: An empirical study. *Computers & Education*, 55(3), 1211–1219.
- Lu, L. (1999). Work motivation, job stress, and employees' well-being. *Journal of Applied Management Studies*, 9(8), 61–63.
- Lu, J., Yao, J. E., & Yu, C. S. (2005). Personal innovativeness, social influences and adoption of wireless Internet services via mobile technology. *Journal of Strategic Information Systems*, 14(3), 245–268.
- Ma, Q., & Liu, L. (2004). The technology acceptance model: A meta-analysis of empirical findings. *Journal of Organizational End User Computing*, 16, 59–72.
- Malik, S. (2012, August 5). *Kindle e-book sales have overtaken Amazon print sales, says book seller*. The Guardian. Retrieved from www.guardian.co.uk/books/2012/aug/06/amazon-kindle-ebook-sales-overtake-print.
- McGill, T. J., & Bax, S. (2007). From beliefs to success: Utilizing an expanded TAM to predict web page development success. *International Journal of Technology and Human Interaction*, 3(3), 36–52.
- Midgley, D. F., & Dowling, G. R. (1978). Innovativeness: The concept and its measurement. *Journal of Consumer Research*, 4, 229–242.
- Mitchell, T. R. (1982). Motivation: New directions for theory, research, and practice. *Academy of Management Review*, 7(1), 80–88.
- Moon, J. W., & Kim, Y. G. (2001). Extending the TAM for a world-wide-web context. *Information and Management*, 38(4), 217–230.
- Morris, M. G., & Venkatesh, V. (2000). Age differences in technology adoption decisions: Implications for a changing work force. *Personnel Psychology*, 53(2), 375–403.
- Park, S. Y. (2009). An analysis of the technology acceptance model in understanding university students' behavioral intention to use e-learning. *Educational Technology & Society*, 12(3), 150–162.
- Park, S. Y., Nam, M. W., & Park, U. G. (2008). The structural model of factors affecting e-learning use of teachers in vocational high school. *Journal of Agricultural Education and Human Resource Development*, 40(2), 139–160.
- Park, N., Roman, R., Lee, S., & Chung, J. (2009). User acceptance of a digital library system in developing countries: An application of the technology acceptance model. *International Journal of Information Management*, 29(3), 196–209.
- Pattueli, C., & Rabina, D. (2010). Forms, effects, function: LIS students' attitudes towards portable e-book readers. *Aslib Proceedings*, 62, 228–244.
- Pew Research Center (2012, April). Pew e-book survey: 20 percent of U.S. is reading electronically. Retrieved from <http://www.thedailybeast.com/articles/2012/04/05/pew-e-book-survey-20-percent-of-u-s-is-reading-electronically.html>
- Rose, G., & Straub, D. (1998). Predicating general IT use: Applying TAM to the Arabic world. *Journal of Global Information Management*, 6(3), 39–46.
- Seery, M. D., Weisbuch, M., Hetenyi, M. A., & Blascovich, J. (2010). Cardiovascular measures independently predict performance in a university course. *Psychophysiology*, 47, 535–539. <http://dx.doi.org/10.1111/j.1469-8986.2009.00945.x>.
- Serenko, A. (2008). A model of user adoption of interface agents for e-mail notification. *Interacting with Computers*, 20, 461–472.
- Shepperd, J. A., Grace, J. L., & Koch, E. J. (2008). Evaluating the electronic textbook: Is it time to dispense with the paper text? *Technological Psychology*, 35, 2–5.
- Straub, D., Limayem, M., & Karahanna-Evaristo, E. (1995). Measuring system usage: Implications for IS theory testing. *Management Science*, 41, 1328–1342.
- Thong, J. Y. L., Hong, W., & Tam, K. (2002). Understanding user acceptance of digital libraries: What are the roles of interface characteristics, organizational context, and individual differences? *International Journal of Human Computer Studies*, 57, 215–242.
- Trocchia, P. J., & Janda, S. (2000). A phenomenological investigation of internet usage among older individuals. *Journal of Consumer Marketing*, 17(7), 605–616.
- Turner, M., Kitchenham, B., Brereton, P., Charters, S., & Bugden, D. (2010). Does the technology acceptance model predict actual use? A systematic literature review. *Information Software Technology*, 52, 463–479.
- van der Velde, W., & Ernst, O. (2009). The future of eBooks? Will print disappear? An end-user perspective. *Library Hi Tech*, 27, 570–583.
- Vassiliou, M., & Rowley, J. (2008). Progressing the definition of 'e-book'. *Library Hi Tech*, 26(3), 355–368.
- Venkatesh, V., & Speier, C. (1999). Computer technology training in the workplace: A longitudinal investigation of the effect of mood. *Organizational Behavior and Human Decision Processes*, 79(1), 1–28.
- Woody, W., Daniel, D., & Baker, C. (2010). E-books or textbooks: Students prefer textbooks. *Computers & Education*, 55, 945–948.
- Yekutieli, S. (1990). *Fathers' and mothers' confrontation with the transition of parenthood* (Unpublished master's thesis). Bar-Ilan University, Tel Aviv, Israel.

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