



Recommendation sources on the intention to use e-books in academic digital libraries

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Abstract

Purpose – Few library studies have investigated recommendation classifications for e-book (electronic book) usage, while none have directly compared what recommendation sources (word-of-mouth, advertising, and expert recommendation) might influence e-book usage intentions. To fill this gap in the literature, the main purposes of this study are to: examine how users perceive the influence of recommendations on the intention to use e-books for academic purposes; and to measure the level of the perception of trust and perceived risk when users receive e-book recommendations from peers, advertisers, and experts.

Design/methodology/approach – Data for this study were collected from 382 academic digital library users between the ages of 18 and 25. A multiple regression analysis was then conducted to identify the key causal relationships.

Findings – The comparison of three recommendation sources (word-of-mouth, advertising, and expert recommendations) revealed that word-of-mouth (WOM) played a more important role than other recommendations in determining the intention to use e-books in an academic digital library. In addition, enhancing the perceived trust and reducing the risk towards the use of e-books can mediate the relationship between recommendation sources and the behavioural intentions to use e-books.

Research limitations/implications – This study assessed self-reported behavioural intention as part of its survey and, as a result, could have introduced unintentional inaccuracies.

Practical implications – Librarians should emphasise e-book advantages (e.g. easy searching, easily accessible index) to get positive recommendation if users follow all of the recommendations of the source. They can also create online discussion forums to provide usage intention discussions, which can influence users' perceptions of trust and risk and increase the willingness of potential users to read e-books.

Originality/value – Little has been written on the intentions of using e-books. Therefore, this conceptual model is novel. This model is also useful in explaining how recommendations stimulate the intentions of using e-books by enhancing the perceived trust and reducing the perceived risk; these findings may generally be applicable to librarians, current users, and potential users.

Keywords Books, Academic libraries, Taiwan, User studies, Electronic books

Paper type Research paper



1. Introduction

In a computer-media environment, based on users' information-seeking behaviour, library digitization initiatives and vendors' product offerings, academic libraries have illustrated their interest in e-book acquisition. E-books, or electronic books, are books that are created in, or converted to, a digital format (Abdullah and Gibb, 2006). Academic e-books are an integral part of a scholar's workstation, a networked environment where e-journals, aggregated full-texts, indexes, and other relevant scholarly material, are accessible through a single window opening into a world of permanent, integrated, and cross-linked scholarly resources (Dillon, 2001).

University libraries have illustrated that the demand and use of written content has clearly moved towards electronic sources. As a result, they have begun to amass a sizeable collection of digital materials that includes e-books (Jantz, 2001). Furthermore, academic e-books are gaining in popularity and significance among libraries (Nelson, 2008). Many higher education institutions around the world are placing e-book collections in their campus libraries and adopting e-books as learning materials.

A total of 69 percent of university research libraries were planning to increase their spending on e-books over the next two years, according to a study published by The Primary Research Group (2003). This study involved a survey of 45 research libraries around the world, including the USA, Canada, Australia, Germany, and Japan. Thus, the advantages of academic e-books over traditional texts are being seen, if somewhat gradually. Even though e-books offer the convenience of searching by keywords and using them anytime and anywhere, their popularity has not grown dramatically because users lack the awareness and training of using them (Connaway and Wicht, 2007), they have no sense of ownership during frequent use over an academic year, and they have a preference for books in print (Rowland, 2007). We expect that the negative evaluation of e-books can be rectified via better and more accurate recommendations. The reason is that most users, or potential users, rely on interpersonal and other recommendation sources to make their usage decisions (Selnes and Gronhaug, 1986).

The sources of the recommendations can be classified as interpersonal, impersonal (Andreasen, 1968) and neutral sources (Cox, 1967). Prior researchers have been able to shed some light on the importance of recommendation sources in the context of product purchases (Murray, 1991), however, little is known about the relevance of these recommendation sources to the context of e-book usage. One of our primary goals in this study was to better compare the sources of recommendations that may lead to different degrees of academic e-book usage.

However, the user intentions may be directly affected by the perception of trust and risk in online environments (Mukherjee and Nath, 2007; Kiran *et al.*, 2008). Thus, another of our primary goals was to explore whether the effect of recommendation sources, including word-of-mouth (e.g. interpersonal recommendation), advertising (e.g. impersonal recommendation) and expert recommendations (e.g. neutral recommendations), can enhance the library users' credence and reduce their risks in adopting e-books in academic digital libraries. That is, the mediating effects of trust and risk may strengthen the relationship between the recommendation sources and the behavioural intentions to use e-books.

2. Theoretical background and research hypotheses

2.1 *Reviews of e-books*

E-books are similar to printed books, only the medium is different. To some, an “e-book” means any type of digitized material that was previously available in print format (e.g. books and reference materials). In the e-book industry, the term implies to the use of devices designed to distribute and allow for the “reading” of largely copyrighted, digitized books (Herther, 2005). With the continual massive growth of the internet, texts presented as e-books can be updated quickly, be dynamic, interactive, and accessible anytime from anywhere (Wilson *et al.*, 2002). E-books are regarded as a vital digital resource, as they can be available and searched from a library web site, offer helpful characteristics that include the use of multimedia, hyperlinks, and other interactive components; search features; and the ability to customize text appearance or convert text to audio.

Gibbons *et al.* (2003) suggested seven types of e-book functionality, including: the physical functionality of the device (such as readability, ergonomics), functionality that helps read the content (such as searchability, navigational tools), enhancing functionality (such as the inclusion of multimedia, links to data and bulletin boards), functionality that places the content within a context (such as links to other e-content, inter-textual search ability), functionality that helps the reader “possess” the text (such as making annotations, printing), and the functionality that supports library activities (such as preserving the confidentiality of users, being “scrubbable”). E-books also offer presumed lower reproduction and distribution costs, and longevity, as they are paperless (Mattison, 2002; Shirattudin *et al.*, 2003).

On the other hand, it is important to note that e-books cannot, and probably will not, ever fully replace print collections for libraries. They are not available for all subject areas and have limited uses. The subject areas that are most likely to be available today on e-books are reference materials, classic literature, economics, business, health, education, technology, engineering, and computer science. Copyright restrictions, a limited selection of e-books in certain subjects, and the difficulty of citation are other key concerns. In the academic environment, e-books have already had a significant impact on academic libraries. There have also been major advances in technology that will bring further changes. The “academic” e-books used in this study related to student materials that confer knowledge, e.g. e-journals, learning materials and instruction manuals (Hoorebeek, 2003).

Recently, academic libraries, whether domestic or abroad, are realizing the potential benefits of adding e-books to their collections and are now addressing the concept and details of e-book acquisition more closely (Landoni and Hanlon, 2006). The Primary Research Group (2003) reported that libraries have found e-books to be most useful for supplementing collections, used in distance-learning programs, and increasing library e-reserves. However, Anuradha and Usha (2005) pointed out that one of the main unfavourable features of e-books is a lack of user-friendliness for the interfaces. Academic students also want more multimedia capabilities and better knowledge when using e-books (ebrary, 2008). This is another compelling reason to understand whether recommendations from different sources can help correct the negative impression often presented by e-books and enhance the perceived trust, reduce the perceived risk, and attract more people to use e-books.

2.2 Behavioural intention

Behavioural intention is an indication of an individual's readiness to perform a given behaviour. It is assumed to be the immediate antecedent of behaviour. It is also based on the attitude toward the behaviour, subjective norm, and perceived behavioural control with each predictor weighted for its importance in relation to the actual behaviour and the population of interest. In this study, we emphasize the behavioural intention to use e-books, rather than actual usage. Davis *et al.* (1989) was able to demonstrate that behavioural intention was significantly correlated with actual usage and that behavioural intention was a major determinant of user behaviour.

2.3 Perceived trust

Mayer *et al.* (1995) defined trust as behavioural, being based on one's personal beliefs about the characteristics of another person. Since, in a virtual environment, the degree of uncertainty of a transaction is higher than in a traditional setting, trust becomes an even more important factor (Roca *et al.*, 2009). Past research on e-commerce has illustrated that trust in online vendors does increase consumer intentions to use a vendor's web site (e.g. George, 2002; Mukherjee and Nath, 2007).

2.4 Perceived risk

Perceived risk is conceptualized as the subjective expectation of a loss (Stone and Gronhaug, 1993) and refers to someone's perception of the uncertain and the adverse consequences of engaging in an intention or behaviour. Perceived risk is also an important element in affecting behaviour in online environments (Jarvenpaa *et al.*, 1999; Kiran *et al.*, 2008). In other words, people perceive a higher level of risk in an online environment than in a physical environment (Tan, 1999). Pavlou (2003) also revealed that perceived risk has a negative effect on usage intentions regarding information technology. Other studies have suggested that perceived risk enhances the exploratory or information search tendencies (e.g. Batra and Sinha, 2000; Campbell and Goodstein, 2001) because people seek out information to ensure whether the uncertain consequences of new technology adoption lies in their own acceptable levels (Dholakia, 2001; Dowling and Staelin, 1994). In the digital library environment, the user adoption of e-books may be affected by the perceived risk.

Since this study focuses on the information product domain (e.g. academic electronic books), we introduced three risk dimensions in this domain-specific circumstance: performance risk, time risk, and social risk. Performance risk is the concern that products will not perform as anticipated (Kim and Lennon, 2000). Time risk refers to the perception that the adoption and the use of the product will take too much time (Roselius, 1971). For example, time-conscious users with less available time were more likely to use an e-book to save time (Feathermana and Pavlou, 2003). Social risk has to deal with the negative responses received regarding an item through a person's social network (Dowling and Staelin, 1994).

Based on the trust model suggested by Mayer *et al.* (1995), perceived trust and perceived risk are essential constructs when uncertainty is present. Most people perceive a level of trust when they consider using something. Therefore, obtaining recommendations can enhance a sense of trustworthiness that then supports their intentions or behaviours. Similarly, people perceive risk when they consider using something. As a result, they obtain recommendations to lessen that uncomfortable

feeling and reduce the risk. The basic assumption then is that perceived trust and perceived risk will have a positive (negative) effect on an individual's intentions to engage in using e-books. Thus, the following associated hypotheses were developed:

- H1. Higher perceived trust will lead to higher behavioural intentions to use e-books in an academic digital library.
- H2. Lower perceived risk will lead to higher behavioural intentions to use e-books in an academic digital library.

2.5 Sources of recommendations

Cox (1967) categorized information sources into three categories: consumer-dominated, marketer-dominated, and neutral sources. While marketer-dominated sources (i.e. packaging, promotion, and, advertising), were controlled by the marketer, consumer-dominated sources referred to interpersonal informational channels, over which the marketer has little control. Neutral sources (i.e. consumer reports, newspapers) were recommendation sources controlled neither by the marketer, nor by the consumer.

Andreasen (1968) further classified information sources into four categories: impersonal advocate, impersonal independent, personal advocate, and personal independent. Impersonal advocate sources included print media and broadcast advertising, while personal independent sources consisted of information gathered from popular articles and broadcast programming. Personal advocate sources referred to information received from salespersons, and personal independent sources included facts gathered from friends and relatives. Adapting to the e-books market and the prior literature, we concluded that WOM (interpersonal source), general advertising (impersonal source) and expert recommendations (neutral source) may lead to the behavioural intention to use e-books in an academic digital library.

2.5.1 Word-of-mouth (WOM) sources. Word-of-mouth (WOM) recommendation sources are primarily interpersonal sources, where interpersonal sources refer to non-commercial personal sources used by consumers to gather product-related information. These sources may include family, friends, and colleagues, but excludes sales personnel and other sales representatives (Mourali and Laroche, 2005). Thus, the following hypotheses are offered:

- H3a. Positive WOM will have a positive effect on perceived trust when using e-books in an academic digital library.
- H3b. Positive WOM will have a negative effect on perceived risk when using e-books in an academic digital library.
- H3c. Positive WOM will have a positive effect on behavioural intentions to use e-books in an academic digital library.

2.5.2 Advertising. Jung and Choi (1999) determined that advertising could be classified into three groups: attraction tools, advertisement content, and follow-up marketing. The attraction tool provides an easy way for consumers to locate and visit a site through banners and search engines. Advertisement content provides core advertising messages and information on products and services. Follow-up marketing provides information to special targets through e-mails or "push" advertisements.

Although many people are inundated with advertising every day, librarians are used to applying various advertising techniques for the express purpose of delivering information messages to recruit users and educate them. Traditional advertising modes include newspapers, magazines, television, radio, mailboxes and public transportation. Web advertising also has many forms, such as contextual ads on search engine result pages, banner ads (graphical elements on a web page), and e-mail marketing (including e-mail spam).

Effective advertising can aim exposure at e-book information, but it may also lead to increased trust, decreased risk, or different levels of usage intentions. Therefore, we investigated the mediating effects of perceived trust and perceived risk on the intentions to use e-books and hypothesized that:

- H4a.* Effective advertising will have a positive effect on perceived trust in using e-books in an academic digital library.
- H4b.* Effective advertising will have a negative effect on perceived risk in using e-books in an academic digital library.
- H4c.* Effective advertising will have a positive effect on the behavioural intentions to use e-books in an academic digital library.

2.5.3 Expert recommendation sources. Expert recommendations exploit detailed heuristics and social interactions to recommend sources of expertise in an organizational environment (McDonald and Ackerman, 2000). In online environments, people may seek out an expert as a source of information for a particular undertaking. Expert opinions are good methods to use to reduce existing uncertainties that may produce information asymmetry in the decision-making process (Aqueveque, 2006). We hypothesize that expert recommendations will lead to user perceptions and the intention to use e-books. The associated hypotheses then become:

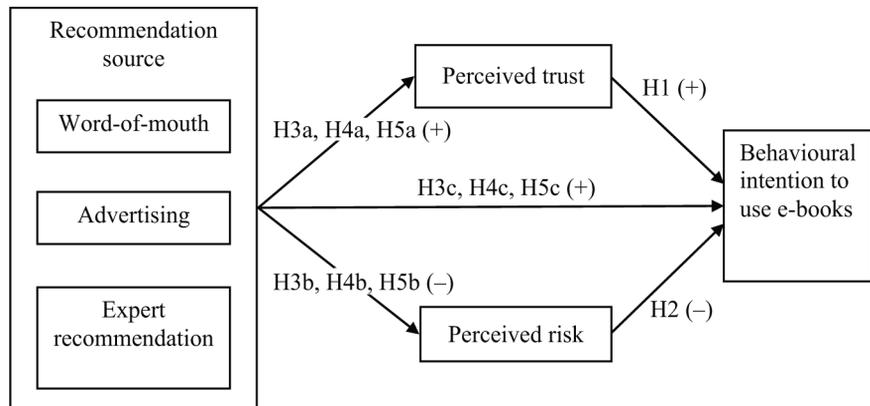
- H5a.* Positive expert recommendations will have a positive effect on perceived trust in using e-books in an academic digital library.
- H5b.* Positive expert recommendations will have a negative effect on perceived risk in using e-books in an academic digital library.
- H5c.* Positive expert recommendations will have a positive effect on behavioural intentions to use e-books in an academic digital library.

3. Methodology

3.1 Research design

We tested the conceptual model (see Figure 1) to capture the relationships between recommendation sources (WOM, advertising, and expert recommendation) and the intention to use e-books in an academic digital library. The two mediators of perceived trust and perceived risk were also discussed. Then, we prepared and conducted a questionnaire to capture participants' opinions towards academic e-book usage intentions to evaluate the influence of recommendations.

Figure 1.
Research model



3.2 Sample and procedure

A total of 382 undergraduate and graduate students from a university in Northern Taiwan participated in the survey. To minimize data variation, the data collection occurred during limited periods. Questionnaires were distributed inside the campus library. The first part of the questionnaire offered the definition of an e-book as “an electronic form of a book that can be viewed and read on a computer in an academic digital library”. The participants were then asked to complete a self-reported questionnaire containing study measures for their intentions to use e-books in the academic digital library.

All subjects that were approached participated in the study voluntarily. Within the sample population: 238 (62.3 per cent) were undergraduate students and 144 (37.7 per cent) were graduate students. The participants were 47 per cent male and 53 per cent female and their age ranged from 18 to 25 years old. Most of the participants (71 per cent) stated that they were familiar with the term e-book prior to taking the survey.

3.3 Measures

All the measurement items were slightly modified from the originals to fit the library environment better. Recommendation sources for behavioural intentions to use e-books were measured in three dimensions: WOM (friend or classmate reviews, e.g. “Your friend/classmate talked you about the advantage of academic e-books”), advertising (banner ads of academic e-books on the library web page, e.g. “Librarians use the web page to present the advantages of academic e-books”), and expert recommendations (professor comments, e.g. “The professor introduced an academic e-books experience in class”). The respondents were asked to choose the recommendation source they would normally consult and indicate the extent to which the source was perceived as an influence of recommendation on a five-point Likert-type scale, with 1 = not very important, 3 = neutral, and 5 = very important. Furthermore, the participants were asked to evaluate the perception of trust and risk in terms of the recommendation, and then determine their e-book usage intentions. The survey also asked questions of multi-item scales, measured on a five-point Likert-type scale where 1 = strongly disagree, 3 = neutral, and 5 = strongly agree.

Perceived trust was measured using three items, based on Smith *et al.* (2005), with higher scores indicating a greater trust in the recommendation in regards to using e-books. The measured items were: "I trust the WOM/advertising/expert recommendation such that, if I were unable to make this decision, I would follow the recommendation to determine whether to use e-books"; "I have confidence in the WOM/advertising/expert recommendation"; and "I relied on the WOM/advertising/expert recommendation."

The measurement for perceived risk was drawn from previous research (Dowling and Staelin, 1994; Kim and Lennon, 2000; Roselius, 1971) and included three items, with lower scores illustrating a lower perception of risk towards using e-books in terms of the recommendation. These items were: "Under the WOM/advertising/expert recommendation, this e-book is extremely risky in terms of how it would perform"; "Under the WOM/advertising/expert recommendation, using e-books in an academic digital library will cause time loss"; and "Under the WOM/advertising/expert recommendation, using e-books in an academic digital library will let me worry that it is not inconsistent with peer opinions."

The remaining three items were adapted from Ajzen (1988) to assess the behavioural intentions of using e-books, with higher scores indicating a greater likelihood of using e-books in an academic digital library. The three items included: "All things considered, I tend to use e-books in an academic digital library"; "I think e-books and online resources on the digital library web site are beneficial"; and "In the future, I intend to use e-books in an academic digital library routinely." Each participant's score for each construct was averaged from its indicators to form a single-indicator construct.

To ensure that the variables in each proposed research construct were internally consistent, reliability assessment was conducted using Cronbach's alpha. The Cronbach alpha coefficients were 0.87 for perceived trust, 0.90 for perceived risk, and 0.89 for behavioural intention. High Cronbach alpha coefficients illustrated that the measures had a good level of internal reliability (Churchill, 1979). We also included three demographic variables (respondent gender, age, and education) and respondent familiarity with e-books as controls in this study.

4. Results

To examine the mediating effects of perceived trust and perceived risk in the recommendation between the effect of recommendation sources and the intentions to use e-books in an academic digital library, we created equation (1) to conduct a regression analysis:

$$Y = \beta_0 + \beta_1 S + \beta_2 T + \beta_3 R + e, \quad (1)$$

where Y is the intention to use e-books, S is the influence of the recommendation, T is the perceived trust, R is the perceived risk, and e is the error term.

The results illustrated that the F -test for the R^2 increment between the reduced model and the full model pointed to significant effects of perceived trust and perceived risk ($R_{reduced} = 0.372$, $R_{full} = 0.966$, $F_{(3,378)} = 28798.36$, $p < 0.001$). Therefore, the observed level of significance for the value of the increment was 0.624, supporting $H1$ and $H2$. The comparison regression results for the reduced model and the full model are presented in Table I, which demonstrates that the explanatory power of the model

may be considered satisfactory ($R^2 = 0.996$) and indicates that the model fits the data and is appropriate for testing the hypothesis. In addition, a positive coefficient ($\beta = 0.86$) indicated that perceived trust was positively associated with the intention to use e-books, while a negative coefficient ($\beta = -0.13$) illustrated that perceived risk was negatively related to the intention to use e-books, and therefore, rendered support for the hypothesized causal relationships.

Furthermore, to test the main effect between recommendation sources and perceived trust, perceived risk, and the behavioural intention to use e-books, we conducted an ANOVA analysis. As illustrated in Table II, WOM, advertising, and expert recommendations had positive main effects on trust in the recommendation ($F_{(2,379)} = 290.42, p < 0.001$), and supported *H2a*, *H3a* and *H4a*, respectively. This analysis also revealed that a negative relationship between recommendation sources and perceived risk ($F_{(2,379)} = 311.63, p < 0.001$), supporting *H3b*, *H4b* and *H5b*. The findings implied that a lower perception of risk would lead to higher usage intentions of using e-books. The main effect between recommendation sources and behavioural intentions to use e-books was significant ($F_{(2,379)} = 299.04, p < 0.001$), rendering support for *H3c*, *H4c* and *H5c*. The findings imply that, irrespective of the mediating effects of perceived trust and perceived risk, the main effect of recommendation sources directly influences the behavioural intention to use e-books.

5. Implications

Our findings reveal that WOM communication and expert recommendations play a more important role than advertising recommendations in determining the perception

Table I.
Results of regression analysis examining the influence of perceived trust and perceived risk related on behavioural intention

Independent variable	Coefficient	Behavioural intention			
		Reduced model		Full model	
		β	<i>p</i> -value	β	<i>p</i> -value
Intercept	β_0				
Recommendation source	β_1	0.61	0.000***	0.09	0.031*
Perceived trust	β_2			0.86	0.000***
Perceived risk	β_3			-0.13	0.000***
<i>F</i> -value		226.81	0.000***	28,789.36	0.000***
R^2		0.374	0.996		
Adjusted R^2		0.372	0.996		

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Comparison between the reduced model vs. the full model

Table II.
Main effects of recommendation source

	Recommendation source			<i>F</i> -value	<i>p</i> -value
	WOM (<i>n</i> = 128)	Ads (<i>n</i> = 122)	Expert (<i>n</i> = 132)		
Perceived trust	4.95	3.24	4.32	290.42	0.00***
Perceived risk	1.02	2.78	1.66	311.63	0.00***
Behavioural intention	4.98	3.24	4.33	299.04	0.00***

Note: Mean value on a five-point scale, where 1 indicated “strongly disagree” and 5 indicated “strongly agree”. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

and intentions regarding the use of e-books. This result is congruent with Yeung and Yee (2003), who indicated that the reliability of the level of expert opinion was lower than WOM in the decision-making process. Agreeing with the suggestions of Gilly *et al.* (1998), this study found that interpersonal sources (WOM or expert recommendation) generally appeared to be more preferred than non-personal sources (advertising recommendations).

An academic digital library can be created to meet academic resource needs. Librarians have to emphasize the benefits and advantages of e-books (e.g. easy searches and indexes, a reduction of book costs, and increased convenience) to encourage users to search academic resources, use e-books and share their e-book usage patterns with other potential users, such as family, friends, and classmates. Experts (such as professors and relevant professionals) may also be based on neutral concepts to provide a practical operation manual and guide to help users enhance their knowledge of e-books. Expert ideas and suggestions should be considered and can be useful in influencing usage intentions.

Furthermore, advertising effects appeared to be less than the effects of WOM and expert recommendations on behavioural intentions; these effects can impress users or potential users and persuade them into action (Kanso and Nelson, 2004). Advertising links were the most frequently used method on library web sites (Švencionyte, 2005). Librarians can apply different advertising strategies (e.g. presenting online advertising and posting library announcements) to promote the linking portal to e-books and attract greater user attentions and interactivities.

In addition, the mediators of perceived trust and perceived risk appeared to be powerful elements in explaining the intention to use e-books using recommendation sources. Indeed, recommendation effects can enhance the perceived trust and reduce the perceived risk, leading to determining whether or not to use e-books. Consistent with Pavlou (2003), who suggested that integrating trust and risk can explain the user acceptance of e-commerce, a possible explanation for this result came from the finding that users can maximize their “confidence” and minimize “uncertainty” by gaining recommendations as they decide whether to use e-books in an academic digital library.

As mentioned previously, users can obtain an effective recommendation from different sources. Thus, librarians should create a discussion forum on library web sites to allow greater exposure to e-book information, stimulating potential users to browse all relevant information on e-books. This will also increase the desire to use e-books and navigate topics they wish to investigate more easily. In this way, users can quickly find recommendations from others (including social networks, user communities, and expert networks) to foster their intentions of using e-books.

Congruent with the findings of Bickart and Schindler (2001), discussion forum messages have greater credibility in inducing empathy among potential e-book users than advertising. Providing online discussions about e-books and their benefits could diminish future hesitancy to use e-books and raise self-confidence in this new media.

6. Conclusions

The contributions of this study to library research are threefold. First, this study was a pioneering effort in explaining the behavioural intentions toward the newly emerging genre of academic e-books, which has recently become much more available. Second, the main aim of this paper was to investigate and compare the influence of

recommendation sources on the behavioural intentions to use e-books in an academic digital library. Finally, according to our findings, we inferred that an increased perception of trust and decreased perception of risk could mediate the relationship between recommendation sources and the behavioural intentions to use e-books in an academic digital library.

A few issues remain to be addressed. One limitation of this study is that the investigation of the behavioural intentions to use e-books is relatively new to library researchers. The discussed findings and their implications were gathered from one single study that targeted a specific user group in Taiwan. Thus, continued research is needed to generalize the findings. In addition, further discussion regarding other user groups besides students would be beneficial. Another limitation of this research is that the data collection was cross-sectional. That is, it measured the perceptions and intentions at a single point in time. However, perceptions often change over time, as individuals gain more experience (Mathieson *et al.*, 2001). This tendency towards change has implications for researchers and practitioners who are interested in predicting e-books usage intentions over a longer period of time.

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Further reading

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