

Investigating continuance intention of using e-book among higher education students

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ABSTRACT

This paper investigates determinant of continuance intention to use e-book among higher education students. The determinants used in this paper are adopted from Technology Acceptance Model (TAM) and Expectancy Disconfirmation Theory (EDT). The study employed a random sampling method where email invitation which contained a hypertext link of the survey page, enables the participants to access to the survey hosted in Google Drive. Out of 760 sample size, a total of 650 responses were gathered with 509 valid responses. Structural Equation Modeling (SEM) analysis is used for data analysis to test the relationship between determinants in the model. The finding demonstrates that determinant of continuance intention to use e-book are based on Satisfaction, while Satisfaction is strongly determined by Perceived Ease of Use and Confirmation of using e-book. Internet self-efficacy is reported to have strong effect on Satisfaction through Perceived Ease of Use, while Perceived Quality affects Satisfaction of using e-book through Confirmation. In general, findings from this study are beneficial for libraries as determinants of continuance intention of using e-books could also be used in selecting and evaluating features of e-books before subscription. Additionally, e-book vendors could use these findings to improve and enhance features of their e-books services.

Keywords: e-book; electronic books; higher education; academic library; continuance intention

Introduction

E-book has become a prominent service in libraries as it provides users with convenient means of accessing resources in the digital era. Nowadays, most of the libraries including academic libraries have included e-book in their collections. This has motivated researcher to further understand user acceptance and perception towards e-book for their reading or referring, as well as to examine usage pattern of e-books. Awareness level of e-book collection has been reported in several studies such as Borchert (2009) and Noorhidawati and Gibb (2008). Awareness in fact motivates people's intension to use, which eventually leads to e-book usage and preference among the user. Oliveira (2012) investigates student's perceptions, behaviour and attitudes towards e-book in academic library. His finding corroborates with previous studies where users preferred to use printed book rather than e-book although he indicates that e-book users are satisfied with the feature of e-book. In addition, Nicholas (2008) reported 61.8% of their respondents use e-book for various purposes. Another report on a large-scale survey

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that was carried out to assess academic awareness, perceptions and usage levels of e-books in a university in UK, found significant number of reading media preference (Rowlands, 2007). The result indicated 48% of the respondents prefer to read e-book on screen, only 13% prefer to read on paper, while 39% vary in using screen, paper or other media to read. This probably is because the choice of using either e-book or printed book depends on the availability of information needed by user. A very recent survey study in India on the other hand, concluded that users are not significantly concerned by the choice of e-book or printed book, but on the availability of information sources regardless of whether it is in digital or printed format (Ramaiah, 2012).

In variation of e-book usage such as reading or referring, Ismail and Zainab(2005) reported that e-books were mainly used for completing students' research projects and assignments. This result is supported by another study where it was reported that e-books are used as reference materials rather than for reading (Noorhidawati & Gibb, 2008). This could possibly be due to available features offered by e-book such as search tools that provides ease of use for referring task. Clark (2006) also reported students appreciate and value the convenience of e-book features such as portability (non-physical), mobility (easy access) and searching features. Moreover, Foote and Rupp-Serrano (2010) found that students desire e-books features particularly in relation to searching, highlighting, and taking notes which are common functions when using books as reference materials.

E-book services in academic libraries have been in place for years and were being accepted by users. The e-book service offered by library is likely to have contented users where the satisfaction could cause users' intention to continuously using it for various purposes. Previous research by Patterson and Spreng (2007) indicated that satisfaction has a positive effect on future intention, while Bhattacharjee (2001) reported an essential link between satisfaction and continuance intention to use e-book. Recently, Richardson and Mahmood (2012) conducted a study to investigate user satisfaction when using different e-readers (iPad, Barnes and Noble's Nook, Border's Kobo Reader and Sony Digital Reader) for reading e-book. They found that portability, ease of use and collections provided are the most desirable features. Another study related to continuance use of e-reader found that user intention to use is solely determined by attitude, which refers to the perception of content enrichment and device personalization (Chou, Stu, & Lin, 2010). These two studies were conducted mainly to investigate factors that influence people to continue to use specific e-book reader, which in turn would help the practitioners, researcher or stakeholder in understanding what are the desirable design, method and features to generally satisfy the users. To date, there is no study in the literature that specifically proposes an investigation of continuation intention to use e-book in academic libraries, particularly in relation to its usability, quality, satisfactory, subjective norms and control. This study is conducted to fill this gap in order to gather better understanding on continuance intention to use e-book among higher education students. This is important to assist libraries in considering and planning inclusion and/or increase of e-books in their collection.

LITERATURE REVIEW

Research Models to Understand E-Book Usage

Available research models have been reviewed systematically to examine elements that could develop valuable insight in understanding e-book users particularly related to continuance intention of using of e-book (Borchert et al. 2009; Letchumanan & Tarmizi, 2011; Tsai, 2012).

Shin (2011) conducted a study examining e-book users' experience by integrating Uses and Gratifications Theory (UGT), Expectation Confirmation Theory (ECT) and Diffusion Theory (DT). UGT is used as a theoretical framework to understand specific reasons why users use a specific media. ECT is a theory that suggests confirmation based on the pre and post behaviour that influences continuation intention and satisfaction as postulated originally by Oliver (1980). DT on the other hand, provides a systematic, demand-side explanation on how and when newly introduced technologies are communicated, adopted, evaluated, rejected, and re-evaluated by users (Rogers, 1995). Shin (2011) found that the moderating effect of confirmation/gratification and demographic are significant as predecessor of e-book technology acceptance.

In accordance with technology implementation, TAM is the most common model being used in understanding the acceptance of a technology being applied and accepted in a specific environment. In e-book research, TAM has been used in several studies. For example, Tsai (2012) conducted a study to understand user behaviour as a primary key in understanding the e-book market. The findings indicate brand, service, trust, and perceived usefulness as having a positive effect on the attitude towards using e-book. Attitude towards using e-book has significant effect on the continuance intention to use. Other than TAM, there is also a reliable framework proposed by Roca, Chiu and Martinez (2006). The framework consists of TAM as well as a combination model of Theory of Planned Behaviour (TPB), TAM and Expectancy Disconfirmation Theory (EDT). Although a number of studies were conducted to evaluate e-book usage, there is no study to date specifically investigate continuance intention to use e-book in academic library. Therefore a combination of continuance intention model (using TPB, TAM and EDT) as suggested by Roca, Chiu and Martínez (2006) is adopted in this study.

RESEARCH OBJECTIVES

The main purpose of this study is to investigate the factors that influence continuation use of e-book at University Malaya academic library. The following research objectives were proposed:

- i. To investigate factors affecting students' perception on e-book usability
- ii. To investigate factors that influence students' satisfaction in using e-books
- iii. To investigate factors which encourage confirmation of using e-book among students
- iv. To investigate factors that influence e-book continuance intention

RESEARCH METHODOLOGY

For the purpose of this study, the survey questionnaires approach was adopted from Roca, Chiu and Martínez (2006). Some of the survey questions were modified accordingly to fit e-book environment as well as to match them with constructs used in this study.

The Proposed Research Model and Hypotheses

A model proposed by Roca, Chiu and Martinez (2006) is adopted to understand the continuation intention of user in using e-book provided by an academic library in a higher educational setting. The model is based on the following three theoretical frameworks: i) TPB; ii) TAM; and iii) EDT. The model includes six constructs, shown in Figure 1, which are; perceived quality, perceived usability, perceived control, subjective norms, confirmation and satisfaction as as.

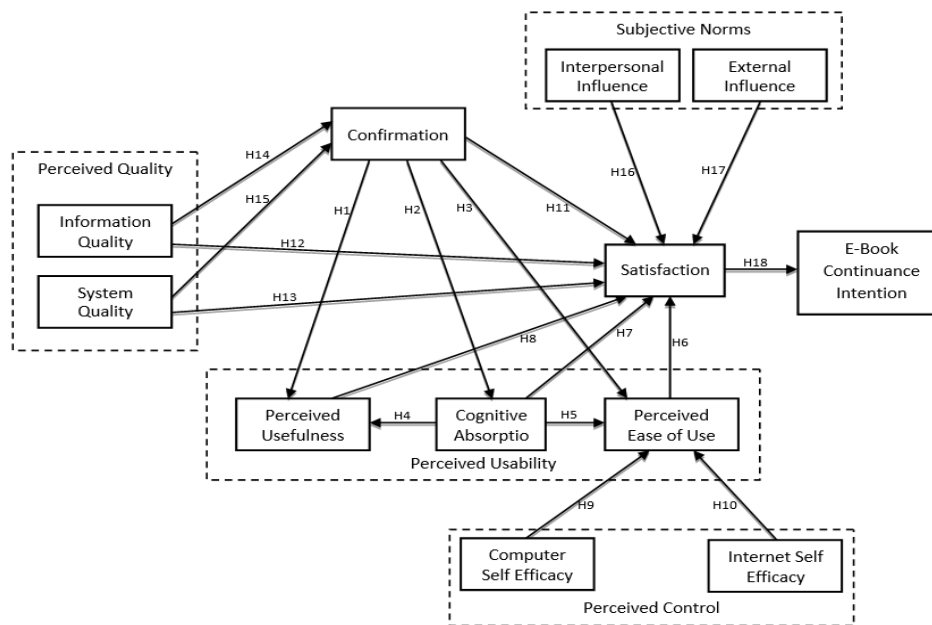


Figure 1: The proposed research model for continuance intention to use e-book

Based on Figure 1, user satisfaction is a determinant of continuation intention in using e-book where the satisfaction's predictors are the perceived quality, perceived usability, confirmation and subjective norms. This study is conducted to provide evidence to the following hypotheses:

- H1.** Confirmation while using e-book has a positive effect on perceived usefulness of e-book
- H2.** Confirmation while using e-book has a positive effect on cognitive absorption in using e-book
- H3.** Confirmation while using e-book has a positive effect on perceived ease of use of e-book

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- H4.** Cognitive absorption while using e-book has positive effect on perceived usefulness of e-book
- H5.** Cognitive absorption while using e-book has positive effect on perceived ease of use of e-book
- H6.** Perceived ease of use of e-book has positive effect on satisfaction in using e-book
- H7.** Cognitive absorption while using e-book has positive effect on satisfaction in using e-book
- H8.** Perceived usefulness of e-book has positive effect on satisfaction in using e-book
- H9.** Computer self-efficacy has positive effect on perceived ease of use of e-book
- H10.** Internet self-efficacy has positive effect on perceived ease of use of e-book
- H11.** Confirmation while using e-book has positive effect on satisfaction in using e-book
- H12.** Information quality has positive effect on satisfaction in using e-book
- H13.** System quality has positive effect on satisfaction in using e-book
- H14.** Information quality has positive effect on confirmation while using e-book
- H15.** System quality has positive effect on confirmation while using e-book
- H16.** Interpersonal influence has positive effect on satisfaction in using e-book
- H17.** External influence has positive effect on satisfaction in using e-book
- H18.** Satisfaction in using e-book has positive effect on continuance intention to use e-book

Measurement

This study used seven-point Likert-type measurement scale, decoded as 1=strongly disagree, 2=disagree, 3=somewhat disagree, 4=undecided, 5=somewhat agree, 6=agree and 7=strongly agree. All the construct items are derived from Roca, Chiu and Martínez's (2006) with few modifications. Cronbach's alpha was used to evaluate reliability and validity of the instrument. For the data analysis, Structural Equation Modeling (SEM) was employed using SPSS AMOS computer software.

Data Collection

The study employed a random sampling method via the University of Malaya (UM) students' email. The random sample size was determined based on Krejcie and Morgan (1970) population and sample table. With a population of 23,000 students, the sample size was determined as 760 (Confidence Level = 95%, Margin of Error = 3.5%). The email invitation, with a hypertext link, enabled the participants to link to the survey database hosted by Google Drive. Table 2 shows the survey response rate. After two rounds of distributions, there were 650 respondents out of which, 508 (78.15%) were complete (Table 2). The response rate is exceptionally good for online survey as Gravetter and Forzano (2008) indicated a typical response rate for online survey is only about 18%. This is probably due to the incentive given to the participants who would win a lucky draw after completing the survey.

Table 2: Survey Response Rate

Total Population	23,000
Total sample	760
Clicked on survey link	650
Incomplete survey	141
Non-completion rate	21.7%
Completed survey	509
Response rate	78.3%

Data Analysis

(a) Reliability and Validity Measurement

A total of 12 factors and 49 items were examined in this study. Factor loadings and internal reliabilities are shown in Table 3. A total of 8 items below the accepted factor loading level were left out as the value suggests that these items are not fit. The other items had a factor loading of above 0.5 and were retained.

Table 3: Cronbach's alpha, standard deviation and factor loading calculation result

Perceived Usefulness: Cronbach's $\alpha = 0.89$	Mean	S.D.	Loading
1. Using e-book can improve my study performance	5.64	1.111	0.92
2. Using e-book can increase my study effectiveness	5.49	1.169	0.92
3. I find e-book is useful to me	5.89	1.106	0.87
Perceived Cognitive Absorption: Cronbach's $\alpha = 0.81$	Mean	S.D.	Loading
4. Time flies when I am reading/referring e-book	5.17	1.32	0.46
5. Most times when I read e-book, I end up spending more time than I had planned	4.76	1.499	0.72
6. When I am accessing e-book, I am able to block out most other distractions	4.24	1.457	0.73
7. While using e-book, I am absorbed in what I am doing	4.95	1.246	0.81
8. I have fun interacting with the e-book	5.17	1.26	0.82
9. I enjoy using the e-book	5.4	1.259	0.79
Perceived Ease of Use: Cronbach's $\alpha = 0.88$	Mean	S.D.	Loading
10. Learning to use e-book is easy for me	5.65	1.163	0.87
11. It is easy for me to become skillful at using the e-book system	5.53	1.155	0.92
12. My interaction with e-book system is clear and understandable	5.51	1.092	0.89
Perceived Internet Self-efficacy: Cronbach's $\alpha = 0.85$	Mean	S.D.	Loading
13. I feel confident in navigating the e-book by following hyperlinks	5.3	1.239	0.9
14. I feel confident in the e-book system searching information	5.61	1.089	0.9
15. I feel confident in the e-book system downloading e-book	5.58	1.062	0.84
Perceived Computer Self-efficacy: Cronbach's $\alpha = 0.81$	Mean	S.D.	Loading
16. I could complete my reading/referring activities using e-book if I had never used any e-book system like it before	5.14	1.319	0.67
17. I could complete my reading/referring activities using e-book if I had only the e-book system manuals for reference	4.86	1.53	0.81

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18. I could complete my reading/referring activities using e-book if I had seen someone else using it before trying it myself	4.92	1.558	0.85
19. I could complete my reading/referring activities using e-book if I had just the built-in-help facility for assistance	5.09	1.451	0.85
Interpersonal Influence: Cronbach's $\alpha = 0.87$	Mean	S.D.	Loading
20. My family thought I should use e-book	4.16	1.429	0.82
21. My colleagues thought I should use e-book	4.68	1.417	0.94
22. My friends thought I should use e-book	4.81	1.363	0.91
External influence: Cronbach's $\alpha = 0.85$	Mean	S.D.	Loading
23. I read/saw news reports that using e-book was a good way of reading	4.9	1.505	0.87
24. Expert opinions depicted a positive sentiment for using e-book	4.94	1.266	0.91
25. Mass media reports convinced me to use e-book	4.58	1.421	0.87
Information quality: Cronbach's $\alpha = 0.70$	Mean	S.D.	Loading
26. The e-book provides relevant information for my study	5.61	1.003	0.7
27. The e-book does not provide easy-to-understand information (R)	4.63	1.552	> 0.3
28. The output e-book from the e-book system is not clear (R)	4.56	1.409	> 0.3
29. The e-book system presents the e-book in an appropriate format	5.14	1.116	0.62
30. The information content in the e-book is very good	5.4	0.983	0.77
31. The e-book from the e-book system is up-to-date enough for my purposes	5.08	1.118	0.75
32. The collection of e-book that the e-book system delivers is not sufficient for my purposes (R)	3.83	1.425	> 0.3
33. The reliability of output information from e-book system is high	5.12	1.06	0.72
34. The e-book system provides the information I need in time	5.28	1.066	0.75
System quality: Cronbach's $\alpha = 0.72$	Mean	S.D.	Loading
35. Number of steps to access an e-book in the e-book system are too many	4.46	1.485	>0.30
36. Steps to access & navigate e-book in the e-book system follow a logic sequence	5.1	0.995	0.82
37. Navigating e-book in the e-book system always leads to a predicted result	4.89	1.18	0.81
38. The organization of information on the e-book system screens is clear	5.22	1.045	0.8
39. The e-book system has natural and predictable screen changes	4.95	1.117	0.82
40. The e-book system responds quickly during the busiest hours of the day	4.5	1.418	0.64
Confirmation: Cronbach's $\alpha = 0.86$	Mean	S.D.	Loading
41. My experience with using the e-book was better than I expected	5.25	1.122	0.89
42. The services provided by e-book system was better than I expected	5.1	1.142	0.88
43. Overall, most of my expectations from using the e-book system were confirmed	5.3	1.055	0.88
Satisfaction: Cronbach's $\alpha = 0.92$	Mean	S.D.	Loading
44. I am satisfied with the performance of the e-book	5.38	1.082	0.92

45. I am pleased with the experience of using the e-book	5.47	1.081	0.93
46. My decision to use the e-book was a wise one	5.47	1.113	0.93
Continuance Intention: Cronbach's $\alpha = 0.92$	Mean	S.D.	Loading
47. I will use the e-book on a regular basis in the future	5.51	1.085	0.94
48. I will frequently use e-book in the future	5.48	1.155	0.95
49. I will strongly recommend others to use it	5.57	1.228	0.91

Notes:

- (R) Reverse Item
- Scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Somewhat Disagree; 4 = Undecided; 5 = Somewhat Agree; 6 = Agree; 7 = Strongly Agree

(b) Hypotheses Testing

In order to understand which variables are significant and have positive effect on the dependent variables, each path in the research model was analysed using standardized path coefficients. This analysis was done using AMOS computer software with SEM analysis. Table 4 cross tabulates direct effect of the research model between independent and dependent variables.

Table 4: Direct effect of research model between variables

	INFQ	SYSQ	CONF	CA	ISE	CSE	EINF	IINF	PU	PEOU	SATF
CONF	.139	.254	.000	.000	.000	.000	.000	.000	.000	.000	.000
CA	.000	.000	1.096	.000	.000	.000	.000	.000	.000	.000	.000
PU	.000	.000	.343	.193	.000	.000	.000	.000	.000	.000	.000
PEOU	.000	.000	.194	.116	.276	.084	.000	.000	.000	.000	.000
SATF	.069	.050	.524	.014	.000	.000	-.001	.057	.072	.119	.000
INT	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.779

Note: PU = Perceived Usefulness; CA = Cognitive Absorption; PEOU = Perceived Ease of Use; ISE = Internet Self-Efficacy; CSE = Computer Self-Efficacy; IINF = Interpersonal Influences; EINF = External Influences; INFQ = Information Quality; SYSQ = System Quality; CONF = Confirmation; SATF = Satisfaction; INT = Continuance Intention

FINDINGS

Analysis of the data revealed that the respondents had experienced in using e-book prior to the survey. The twelve factors identified had been earlier defined and discussed.

Demographic Information

Out of 509 total responses, 349 (68.6%) were undergraduates while 160 (31.4%) were post-graduate students. 253 respondents (49.7%) were male and the other 256 (50.3%) were female.

Respondents were from 18 faculties in UM (Table 5). A high number of responses were obtained from three faculties which provided more than 49% of the overall response. Faculty of Science came top with 106 (20.8%), Faculty of Engineering with 94 responses (18.5%), and Faculty of Computer Science & Information Technology with 51 (10.0%). The number of respondents from each faculty is a reflection of its general population.

Table 5: Composition of respondents by faculty

Faculty	N	%
Faculty of Science	106	20.8
Faculty of Engineering	94	18.5
Faculty of Computer Science & Information Technology	51	10.0
Faculty of Business and Accountancy	43	8.4
Faculty of Medicine	42	8.3
Faculty of Economics & Administration	34	6.7
Faculty of Languages and Linguistics	26	5.1
Faculty of Arts and Social Sciences	24	4.7
Faculty of Law	18	3.5
Faculty of Education	17	3.3
Faculty of Built Environment	15	2.9
Faculty of Dentistry	8	1.6
6 Academic Centers/Institutes	31	6.1
Total	509	100.0

E-books Usage

In terms of e-book usage, 184 (36.1%) respondents reported that they used e-book at least once a week. 117 (23.0%) said that they read e-book at least once a month while only 95 (18.7%) people used e-book on a daily basis. 113 respondents (22.2%) rarely read e-book.

Table 6: Frequency of reading e-book

Average use of e-book	N	%
Weekly	184	36.1
Monthly	117	23.0
Less Often	113	22.2
Daily	95	18.7
	509	100.0

When comparing quantities of e-books read in the past 6 months, 305 (59.9%) of the respondents read up to 10 e-books, 132 (25.9%) read between 11 and 30 e-books, while the balance of 72 (14.2%) of them were reading more than 30 e-books during the period.

Table 7: Quantity of E-books Read

E-books read in the past 6 months	N	%
1 - 10 e-books	305	59.9
11 - 30 e-books	132	25.9
More than 30 e-books	72	14.2
	509	100.0

When asked about how they got to know about e-book, 312 (61.3%) of the respondents knew from the university library while 275 (54.0%) respondents heard about it from their close family, friends and colleagues. 172 (33.8%) of them knew of e-book from

their lecturers. 149 (29.3%) of them only knew of e-book from the news and magazines (printed media). Another 81 (15.9%) respondents provided other resources for example from online interactions, various websites and search engines.

Table 8: Information on E-books

Know of e-books from? (multiple answer)	N	%
UM Library	312	61.3
Family, Friends or Colleagues	275	54.0
Lecturers	172	33.8
News/Magazines	149	29.3
Others	81	15.9

For e-book category, 395 (77.6%) respondents usually downloaded self-managed e-books from the internet or other sources. 229 (45%) of them downloaded from other providers such as Amazon, Google Books, iBook, Kobo and Scribd. 204 (40.1%) of them read e-books from the e-book service subscribed by the university library.

Table 9: Sources of E-books

Source of E-books (multiple answer)	N	%
Self-managed e-Book downloaded from the internet or other sources	395	77.6
e-Book from other provider	229	45.0
e-Book provided by UM Library Portal	204	40.1

Regarding devices used to access e-books, 460 (90.4%) respondents used computers and laptops. 187 (36.7%) of them used smartphones to access while some 113 (22.2%) also used tablets like iPad, Samsung Galaxy, and Playbook. Only 20 (3.9%) respondents used dedicated e-book readers such as Amazon Kindle, Nook and Sony Reader.

Table 10: Devices Used for E-book

Devices used to access /open e-book (multiple answer)	N	%
Desktop Computer/Notebook/Laptop	460	90.4
Smartphone	187	36.7
Tablet	113	22.2
Dedicated e-book reader	20	3.9

Addressing the Research Objectives

Table 11 summarizes the hypotheses test results of the study in addressing the research objectives:

(a) Investigating factors that affect students' perception on e-book usability

The finding demonstrates that *Perception on e-book usability* was determined by *Perceived usefulness*, *Cognitive absorption*, and *Perceived ease of use*. In addition, factors that affect students' perception of e-book usability are signified by *Confirmation* and *Perceived Control (Computer and Internet self-efficacy)*. Furthermore, *Cognitive*

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absorption when using e-book also affected both students' *Perceived usefulness* and *ease of use* of e-books. This is indicated by accepted hypotheses of H1, H2, H3, H4, H5, H9 and H10.

(b) Investigating factors that influence satisfaction in using e-books

Student' satisfaction in using e-books is influenced by the following factors: *Perceived ease of use*; and *Perceived usefulness*, while *Confirmation* influence students' *Satisfaction* in using e-books as indicated by the accepted hypotheses of H6, H8, H11.

(c) Investigating factors that encourage confirmation of using the e-book among students

Factors that encourage *Confirmation* of using the e-book among students are *Information* and *System quality*. This is indicated by accepted hypotheses of H14 and H15.

Table 11: Summary of Hypotheses Test Result

Hypothesis	Path	Estimate	Standard Error	Hypothesis Result
H1: Confirmation while using e-book has a positive effect on perceived usefulness of e-book	CONF -> PU	.343	.043	Accepted
H2: Confirmation while using e-book has a positive effect on cognitive absorption in using e-book	CONF -> CA	1.1	.087	Accepted
H3: Confirmation while using e-book has a positive effect on perceived ease of use of e-book	CONF -> PEOU	.194	.042	Accepted
H4: Cognitive absorption while using e-book has positive effect on perceived usefulness of e-book	CA -> PU	.193	.019	Accepted
H5: Cognitive absorption while using e-book has positive effect on perceived ease of use of e-book	CA -> PEOU	.116	.019	Accepted
H6: Perceived ease of use of e-book has positive effect on satisfaction in using e-book	PEOU -> SATF	.119	.029	Accepted
H7: Cognitive absorption while using e-book has positive effect on satisfaction in using e-book	CA -> SATF	.014	.015	Rejected
H8: Perceived usefulness of e-book has positive effect on satisfaction in using e-book	PU -> SATF	.072	.031	Accepted
H9: Computer self-efficacy has positive effect on perceived ease of use of e-book	CSE -> PEOU	.084	.022	Accepted
H10: Internet self-efficacy has positive effect on perceived ease of use of e-book	ISE -> PEOU	.276	.035	Accepted
H11: Confirmation while using e-book has positive effect on satisfaction in using e-book	CONF -> SATF	.524	.037	Accepted
H12: Information quality has positive effect on satisfaction in using e-book	INFQ -> SATF	.069	.012	Rejected
H13: System quality has positive effect on satisfaction in using e-book	SYSQ -> SATF	.050	.017	Rejected
H14: Information quality has positive effect on confirmation while using e-book	INFQ -> CONF	.139	.015	Accepted
H15: System quality has positive effect on confirmation while using e-book	SYSQ -> CONF	.245	.020	Accepted
H16: Interpersonal influence has positive effect on satisfaction in using e-book	IINF -> SATF	.057	.020	Rejected
H17: External influence has positive effect on satisfaction in using e-book	EINF -> SATF	-.001	.020	Rejected
H18: Satisfaction in using e-book has positive effect on continuance intention to use e-book	SATF -> INT	.779	.035	Accepted

(d) Investigating factors that influence continuance intention for e-books usage

The finding indicates that *Satisfaction* in using e-book influences the *Continuance Intention* to use e-books, as indicated by accepted hypothesis of H18.

DISCUSSION

The research findings validated 13 out of 18 hypotheses with supported empirical data as shown in Figure 2. *Confirmation* was a strong determinant of *Perceived Usability* of e-book, which consists of *Perceived usefulness*, *Perceived ease of use* and *Cognitive absorption*. This is consistent with a previous study by Lin, Wu & Tsai, (2005) on the positive correlation between *Confirmation* and *Perceived usefulness* and *Cognitive absorption*.

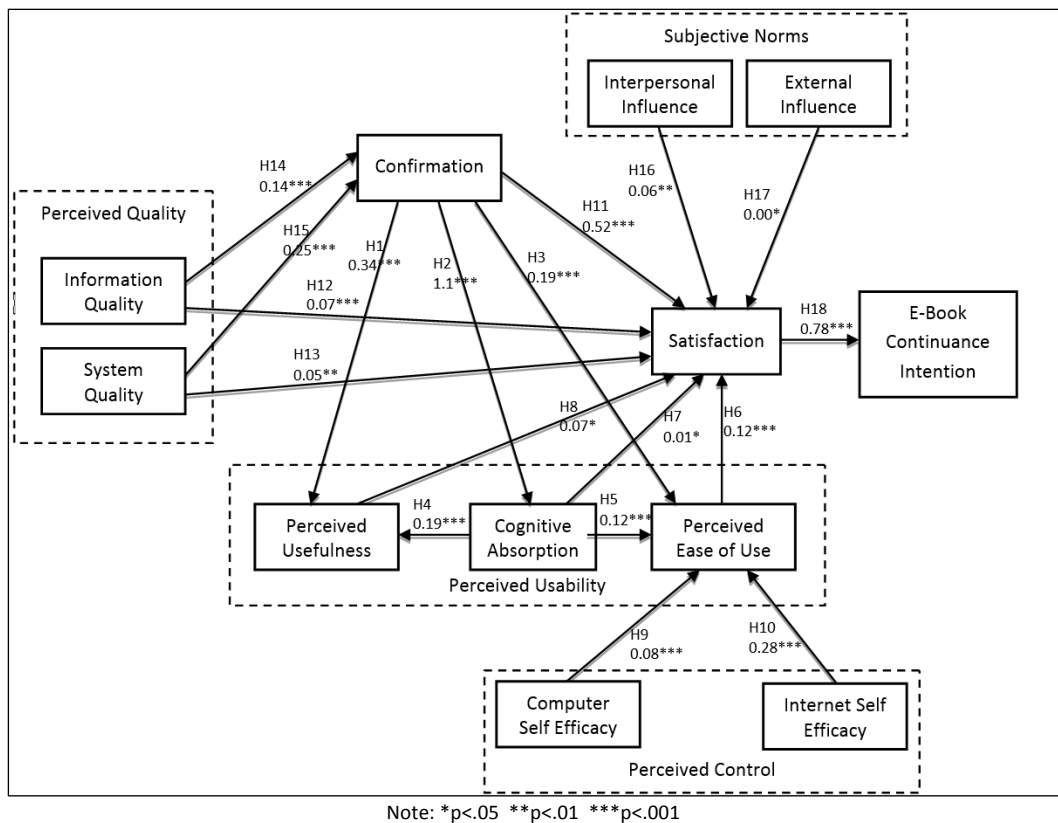


Figure 2: Final Research Model

Perceived Usability appears to have little effect on *Satisfaction*. However, *Perceived ease of use* indicates a stronger effect on *Satisfaction* when compared with *Perceived usefulness* and *Cognitive absorption*, despite their positive correlation with each other. This finding is consistent with previous studies particularly by Agarwal and Karahanna (2000), Saade and Bahli (2005), and Zhang, Li and Sun (2006). It appears that *Satisfaction* is highly influenced by the *ease of use* of e-book rather than by enjoyment in using and usefulness of e-book to the users. This seems to support the notion that a user-friendly e-book is relatively more important than other usability features of an e-book, which is

in-line with previous studies by Rai, Lang and Welker (2002) and Devaraj, Fan and Kohli (2002).

While *Ease of use* is the major determinant among other *Perceived Usability* of e-book, further analysis on the determinants of *Perceived Control* found that the *Internet self-efficacy* has much greater effect on user friendliness compared with *Computer self-efficacy*. This is also consistent with previous study done by Hsu and Chiu (2004). The large difference in *Computer self-efficacy* and *Internet self-efficacy* effect values agrees with Eastin and LaRose (2000), who suggested that *Internet self-efficacy* may distinguish itself from *Computer self-efficacy* as it can successfully perform distinct task which adds on as an additional skill in using computer.

Subjective Norms (External and Interpersonal influences) has very little effect on *Satisfaction* while *Confirmation* is the most significant antecedent. The strong influence of *Confirmation* somehow supports findings of several previous studies by Kanning and Bergmann (2009), Lin (2005), and Yen and Lu (2008).

Perceived Quality (System quality and Information quality) appears to not have substantial effect on *Satisfaction* of using e-books. This is inconsistent with previous studies by McGill, Hobbs and Klobas (2003), and Bharati and Chaudhury (2004), which suggested that *System quality* and *Information quality* are strong antecedents of user *Satisfaction*. Unlike e-learning which requires better quality of information, content and system, e-book systems are affected in different ways. On the other hand, *Perceived Quality* shows rather significant effect on *Confirmation*, which is the strong antecedent of *Satisfaction*. This gives rise to a different perspective in which perhaps, *Perceived Quality* might influence e-book's *Satisfaction* through *Confirmation*, as suggested by Roca, Chiu and Martinez (2006) in their analysis of direct effect.

Satisfaction gives great significance on *Continuance Intention*, thus affecting users' decisions on whether or not to continue with using e-books. Since *Perceived ease of use* reported significant effect on *Continuance Intention* through *Satisfaction*, it is important for e-book developers to design and develop e-book systems that are user-friendly and less complicated to operate. Simple logical steps in e-book design would lead to a good perception on systems user-friendliness. For libraries, it is important to select e-book providers that employ easy-to-use systems. *Confirmation*, another antecedent of *Satisfaction* is influenced by *Perceived Quality*.

CONCLUSION

This research investigated the factors that affect continuance intention to use e-books among students in the higher education. The findings are useful to provide information to both library and e-book service providers to improve their services. In that for students to continually use e-book, it would be determined by several factors such as *Satisfaction*, *Confirmation*, *Perceived Usability*, *Perceived Control* and *Perceived Quality*. Although findings have supported over two thirds of the hypotheses, more investigations can be conducted to focus on a particular factor or on other specific group of user. This finding would be useful and beneficial for e-books implementation in a

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higher education setting. Since the data gathered is adequate to demonstrate significance findings, these recommendations would hopefully bring some improvement in the services and on e-book provision in academic libraries. Having said that, this study does not refer to any specific e-book systems or services, as the respondents generally used several e-book types and systems/platforms. Therefore, this finding is only limited to the reflection of their experiences.

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