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Implementation and evaluation of mobile e-books in a cloud bookcase using the information system success model

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Abstract

Purpose – To continue to develop and improve cloud e-bookcases, the purpose of this paper is to implement a cloud e-bookcase and modifies the information systems (ISs) success model to make it capable of assessing this system. It also provides suggestions for future systems development.

Design/methodology/approach – This study implements a cloud bookcase and uses the IS success model to evaluate user intention and satisfaction with the system. It also develops a success model for the cloud bookcase.

Findings – The results of study indicate that user satisfaction and intention with regard to using the system are positively related to net benefits. In other words, increasing user satisfaction and intention with regard to using the system will have a positive effect on the benefits users receive from doing so.

Practical implications – Users think the functions and services of the cloud bookcase can indeed help them search for and organize information about electronic books. However, they are not satisfied with the information quality. Therefore, further work is needed to identify any important factors that this study did not investigate. This study suggests that the quality of a system's functions and guide service have to be upgraded in order to increase user satisfaction with and intention to use the system.

Originality/value – This study implements a cloud bookcase and uses the IS success model for verification. An overall explanatory power of 77.9 percent is achieved with this approach. User satisfaction with and intention to use the system are independent from each other, and the results caused by various factors can be separately identified. The findings of this study have considerable practical value.

Keywords E-books, Mobile, Library service, Cloud service, E-bookcase

Paper type Research paper

1. Introduction

The emergence of electronic books, or e-books, has altered the approaches readers use to acquire knowledge, with this technology having consolidated a large number of multimedia applications and changed users' reading habits (Grimshaw *et al.*, 2007; Woody *et al.*, 2010; Liang and Huang, 2014). Since most people now carry mobile devices with them at all times, e-books can be read anywhere. This has boosted the use of mobile devices for the reading of e-books, and libraries have thus started to provide e-book services (Kroski, 2009; Wilson and McCarthy, 2010; Chang, 2013; Huang and Liang, 2014; Huang and Chiu, 2015a, b; Pažur, 2014; Pu *et al.*, 2015).

However, mobile devices are different from PCs, and the design of e-book contents has to suit the features of mobile devices that have relatively small screens. If these

limitations are not taken into account, then reading e-books is likely to become less convenient. Libraries intending to provide mobile library services thus have to consider the sizes of mobile devices (Murray, 2010; Pažur, 2014). The computation speed and storage capacity of mobile devices are also incomparable with those of PCs, and cloud services and application programs may be used to make up for these deficiencies by supporting the use of large-sized applications (apps) on mobile devices (Lin *et al.*, 2014; Zurita *et al.*, 2014). Take bibliography management, for example. The use of an e-bookcase on a cloud platform can allow mobile devices to conduct efficient searches and file management. The host cloud's high performance can execute searches, allow personalized management, and transmit the results to mobile devices. This reduces the workload of mobile devices while achieving better execution results at the same time (Liao *et al.*, 2012; Li *et al.*, 2013).

Conducting bibliography management and queries for e-books on mobile devices is different from the process used on PCs. The methods of system development thus need to be changed to develop a successful cloud e-bookcase system, and indicators must also be established to evaluate whether such a system can achieve the expected performance level. A valid evaluation indicator model must thus be developed.

The information system (IS) success model was an indicator model proposed by DeLone and McLean (2003) for the evaluation of ISs performance. It can be applied to examine the influence of systems on people or organizations, and the effects these have on performance. To date, the model has been used to evaluate ISs in a variety of fields (DeLone and Mclean, 2004; Chiu *et al.*, 2006, 2011; Kulkarni *et al.*, 2007; Chen, 2010).

User recognition and use of cloud e-bookcases and the effects of the system will be affected by the system's functions and execution results. To continue to improve the cloud e-bookcase, this study adopts the IS success model for assessment. Based on the above mentioned background and motives, the purposes of this study are as follows:

- to develop the contents of the IS success model to evaluate the use of the cloud e-bookcase system on mobile devices;

- to examine the factors associated with users' agreement to use a cloud e-bookcase on mobile devices; and

- to provide suggestions for further cloud e-bookcase systems development, based on the results of this study.

2. Literature review
2.1 Mobile library service design
Peters (2001) pointed out that the development of library e-book services will center on issues related to reading, devices, reader software, and web-based e-book libraries. Services from libraries' electronic resources will focus on the users' experiences with assistive functions and reading.

Due to the popularity of mobile devices, libraries are now designing applications in order to meet user demands in relation to these emerging technologies. Buczynski (2008) noted that mobile phones offer a number of functions, such as audio communication, web browsing, and multimedia experiences. If libraries have developed mobile library applications based on these features, then users can download and access library collection by web browsers. Wilson and McCarthy (2010) examined a university library's services for mobile devices, and the results showed that students

felt that the mobile library should provide functions as a search engine, reading e-books, checking out books, and getting help. A number of technologies used by library websites can be meet these demands, such as short message services, mobile OPACs, mobile library collection search engines, e-books and mobile reading, mobile instruction, multimedia, and audio tours (Buczynski, 2008; Murray, 2010).

Carney *et al.* (2004) studied library services on PDAs, and the results indicated that such devices could be "e-nooks and web page readers," although the focal library lacked general services as "research library's database and catalog," "saving searches results," and "list of articles or books are updated." The library then launched an application integrating more general services to aid the reading of e-books, with the results showing that this enhanced user acceptance of such books. Lam *et al.* (2009) examined an application called "NetLibrary," which was developed by The Library of The Chinese University of Hong Kong. The students considered that using this application made e-books portable and convenient (i.e. there was no need to go to the library to borrow books), and that the contents could be searched, while they also felt that they could easily adapt to reading whole books on a screen.

The use of e-books is now relatively mature and supported by many applications and devices. This has led to new modes of reading, and this the management of libraries' electronic resources also need to be changed (Letchumanan and Tarmizi, 2011; Hsiao and Tang, 2014; Pažur, 2014). From the users' viewpoint, well-designed operational interfaces and adaptation of screen size on various devices will reduce the negative effects on reading and improve the convenience of using e-books (Lam *et al.*, 2009; Pažur, 2014). Past studies have indicated that services stemming from libraries' electronic resources will be geared toward mobile applications. For this reason, developing satisfactory mobile device functions and operational interfaces will be a major concern in libraries' provision of e-book services in the future.

2.2 The cloud bookcase
Apps, or applications, can be applied to improve library services. Spires (2008) indicated the most common library services are catalog and database access, reading docs, and accessing reference material. Wilson and McCarthy (2010) examined the "Ryerson mobile" application that was developed by Ryerson University Library. This application offers the functions of querying the library's physical resources, search the library's database and catalog, searching books' status, and change their profile configuration settings. Zimerman (2011) studied apps adopted by university libraries in the USA, and suggested that searches, equipment types, e-book copyright management, and reading modes must be taken into consideration in app development. Chang (2013) used the UCLA library as an example, and concluded that information search assistance (lists, book reviews, book and content descriptions, service personnel, and equipment) can improve library services.

App functions are important for promoting e-book reading, as e-books combine software, hardware, and texts. User characteristics also influence their operation of and attitude toward e-books. Therefore, some studies have suggested that e-book apps released by libraries ought to be in line with users' characteristics and allow for cross-platform device access (Lynch, 2001; Chen, 2003; Letchumanan and Tarmizi, 2011; Richardson and Mahmood, 2012).

The e-bookcases released by libraries are a type of cross-device and cross-platform e-book app. They allow users to perform personalized management according to their needs. An e-bookcase consolidates the search functions of libraries' electronic

resources, the reading of e-books, and personalized services. Personal information accounts can be established, and e-books can be loaded quickly for reading (Liao *et al.*, 2012; Li *et al.*, 2013).

When applied to mobile devices, the performance of some apps, and the storage space available to them, are limited in comparison to PCs. Moreover, different devices have different limitations, and thus some apps are not stable on certain machines. Moreover, some of the setup procedures apps use are difficult to carry out, and this can increase user stress and make them less likely to use such systems. Lam *et al.* (2009) surveyed students using a mobile library application, and found that some considered the setup procedures to be cumbersome, were not familiar with how to operate the app, or download and transfer e-books to the devices. Moreover, some devices had small screens which made it difficult to scan the whole page, and thus slowed down their reading. Finally, some applications were not stable on their devices such as Adobe Reader. Murray (2010) noted that some applications should be downloaded to mobile devices, such as OPACS (a system that provides library users with varying degrees of access to the information), in order to make full use of e-book services, but that should spend more storage and computing resources. Moreover, when different devices use same the application, then this will create different user experiences. Developers should thus consider changing their implementation modalities based on users' experience with applications (Cummings *et al.*, 2010).

Since it is the different specifications and features of different devices that lead to the problems outlined above. However, the use of cloud technologies to support mobile devices' access to electronic bookcases is a good solution to this. Cloud technologies can convert large-scale infrastructure resources into shareable services. If devices need these services then users can access them from their devices via a network. This can address device limitations such as the lack of a runtime environment, cumbersome setup procedures or a lack of computer skills among users, a small storage space, and inadequate computing capacity (Mell and Grance, 2009; Lin *et al.*, 2014; Zurita *et al.*, 2014).

The consolidation of cloud technologies enables the fundamental facilities of libraries to transform into shareable resources, thus solving the program execution and storage space problems caused by the varied and often limited specifications of mobile devices.

With the above in mind, the goal of a cloud e-bookcase is to transform e-bookcase functions into shareable online application services that support more mobile devices. This study will thus use the IS success model to examine the effects of such a system.

2.3 The ISs success model
The results of ISs evaluations are often associated with system development decisions. However, evaluating "success" is difficult. DeLone and McLean adopted the relationship between various IS evaluation factors and the processes of information transmission discussed by Shannon and Weaver (1959) and Mason (1978) as the foundation for their work, in combination with a review of the related literature from 1981 to 1987, and proposed the IS success model. This model is capable of explaining systems factors that influence both users and organizations. Based on their work, a concrete definition of "success" was finally available for ISs (Weaver, 1949; Shannon and Weaver, 1959; Mason, 1978; DeLone and McLean, 1992; Petter *et al.*, 2008).

Nevertheless, some researchers suggested that more discussions were needed on the influence of people (Pitt *et al.*, 1995; Seddon and Kiew, 1996; Seddon, 1997; Jiang *et al.*, 2002), and thus DeLone and McLean (2003) modified their original theory, producing the current IS success model. The revised dimensions of this model are information

quality, system quality, service quality, intention to use/use, user satisfaction and benefits of use (Table I).

The modified model places greater emphasis on the dimensions related to conduct and attitude (user satisfaction and intention with regard to using ISs) than the original model did. The original effects on individuals and organizations are consolidated, becoming "benefits of use," and the examination of items related to users is even more comprehensive than before (DeLone and McLean, 2003; Petter *et al.*, 2008).

Development of the IS success model has created concrete indicators for the evaluation of ISs' "success," And thus it has been applied by many scholars and researchers. For example, Ong and Lai (2006) use integrated model between IS model and technology acceptance model to discuss the acceptance of e-learning by different genders. Similarly, Chiu *et al.* (2011) added the concepts of "quality" and "expectancy disconfirmation" to justice theory, to examine knowledge-sharing practices in social groups.

Past studies have proven the practicality of the IS success model. This study thus adopts this model to evaluate the influence of cloud e-bookcases on users, in order to provide development suggestions and to aid in the further development of the model for cloud e-bookcase evaluation and the establishment of evaluation indicators.

3. Description of systems used in this study

This study has developed a cloud e-bookcase system that consolidates bibliographic searches, personalized management, and e-book playing into cloud services that support mobile devices (Figure 1). The search interfaces can be accessed

Dimension	Definition	Reference
System quality	Expectations for the results from using the systems' functions	DeLone and McLean (2003) and Petter *et al.* (2008)
Information quality	Expectations for the quality of output	DeLone and McLean (2003) and Petter *et al.* (2008)
Service quality	Quality of system or support provided to the users	Pitt *et al.* (1995), DeLone and McLean (2003) and Petter *et al.* (2008)
Intention to use	Users' evaluations of their attitudes and conduct when using the information system	DeLone and McLean (2003) and Petter *et al.* (2008)
User satisfaction	Users' satisfaction with system quality, service quality, and information quality	Swanson (1982), Ives *et al.* (1983), Thong and Yap (1996), DeLone and McLean (2003) and Petter *et al.* (2008)
Benefits of use	Benefits for users from using the information system	DeLone and McLean (2003) and Petter *et al.* (2008)

Table I.
Dimensions of the updated IS success model

Cloud Bookcase System

E-book Player   Personalized Arrangement   Search Interface
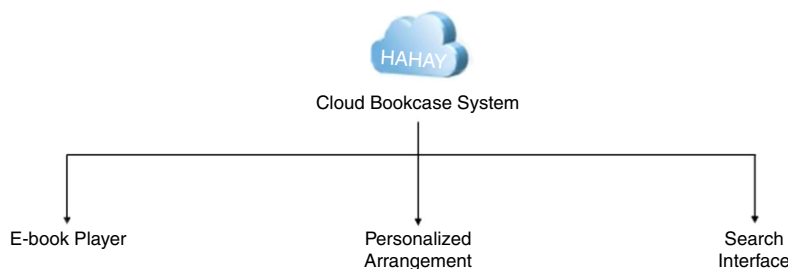
Figure 1.
The functional architecture of the cloud e-bookcase system

through mobile networks, the personalized bookcases, and records of use can be established under personal accounts, and built-in players allow users to read e-books online.

4. Method
This study uses the IS success model to evaluate users' recognition of and attitude toward using mobile devices to operate a cloud e-bookcase system, and also provides suggestions for future development. The questionnaire survey method is adopted. The contents of the questionnaire are designed in accordance with the IS success model: users complete the questionnaire after using the system, then the questionnaire is retrieved and analyzed.

4.1 Measurement tools
A five-point Likert scale is adopted in the questionnaire, and the contents are designed as defined by the IS success model proposed by DeLone and McLean (2003). Specialists and scholars were invited to discuss, revise, and give feedback on the test to ensure the contents comply with the purpose of this system evaluation. After revision, 36 questions remained in the questionnaire.

4.2 Conceptual model and hypotheses
The IS success model proposed by DeLone and McLean (2003) was modified for the purposes of this study, as shown in Figure 2. The theoretical bases and influences of the hypotheses are discussed below.

"System quality" refers to user expectations with regard to system operations, including ease of use, speed, reliability, and so on. System quality is predicted to have a positive influence on intention to use the system and user satisfaction (DeLone and McLean, 2003; Petter *et al.*, 2008).

Following hypotheses are thus proposed as follows:

H1a. System quality has a positive influence on users' intention to use the cloud e-bookcase.

H1b. System quality has a positive influence on users' satisfaction with the cloud e-bookcase.
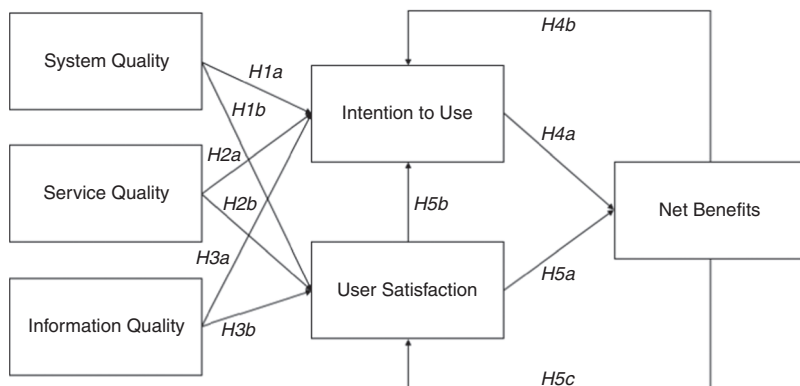

Figure 2.
Conceptual model, dimension, and hypotheses

"Service quality" refers to an expectation of assistance from the system or its provider, and includes the speed and accuracy of the system's responses to questions and service personnel's level of professionalism, general attitudes, and response speed. The provision of good assistance has a positive influence on users' intention to use the system and on their satisfaction with it (Pitt *et al.*, 1995; DeLone and McLean, 2003; Petter *et al.*, 2008).

Following hypotheses are thus as follows:

H2a. Service quality has a positive influence on intention to use the cloud e-bookcase.

H2b. Service quality has a positive influence on users' satisfaction with the cloud e-bookcase.

"Information quality" refers to the expectations surrounding the results of information output, including whether they are comprehensible, accurate, and meet the users' needs. Good information output has a positive influence on users' intention to use the system and on their satisfaction with it (DeLone and McLean, 2003; Petter *et al.*, 2008).

Following hypotheses are thus as follows:

H3a. Information quality has a positive influence on intention to use the cloud e-bookcase.

H3b. Information quality has a positive influence on users' satisfaction with the cloud e-bookcase.

"Intention to use" refers to users' attitudes toward the results of use, including frequency of use, purpose of use, and willingness to use. Intention to use is influenced by the results of use (DeLone and McLean, 2003; Petter *et al.*, 2008).

Following hypotheses are thus as follows:

H4a. Intention to use the cloud e-bookcase has a positive influence on the benefits of use.

H4b. The benefits of using the cloud e-bookcase have a positive influence on users' intention to use the system.

"User satisfaction" refers to the level of user satisfaction with the results of their use experience; in other words, user satisfaction refers to the difference between the actual and expected benefits. When the difference is small or satisfaction exceeds expectations, users' satisfaction increases and has positive effects on the recognition of the benefits of use and intention to use it. User satisfaction is thus influenced by the use of the system (information, service, and system quality) and actual benefits. In turn, satisfaction has an influence on users' intention to use the system (Swanson, 1982; Ives *et al.*, 1983; Thong and Yap, 1996; DeLone and McLean, 2003; Petter *et al.*, 2008).

Following hypotheses are proposed as follows:

H5a. User satisfaction with the cloud e-bookcase has a positive influence on the benefits of use.

H5b. User satisfaction with the cloud e-bookcase has a positive influence on users' intention to use the system.

H5c. The benefits of using the cloud e-bookcase have a positive influence on user satisfaction.

4.3 Participants
The cloud e-bookcase system features library e-book search and management functions. College students have the need to search the literature for references to support their academic activities (Lam *et al.*, 2009). Therefore, students from three universities in southern Taiwan were chosen to participate in this work. The test involved the following three steps: first, acquiring the system URL; second, using mobile devices (tablet computers, smartphones) to operate the system; and third, filling out the questionnaire upon completion of the operation. The survey was carried out between April 27 and May 1, 2015. In total, 300 copies of the questionnaire were administered, and 201 copies were retrieved. After the elimination of 78 invalid copies, which had missing or regular values, 123 valid copies remained, yielding a valid response rate of 41 percent.

5. Results
This study used SmartPLS 2.0 M3, developed by Ringle *et al.* (2005), to perform reliability and validity analyses, and applied partial least squares structural equation modeling (PLS-SEM) to verify its framework.

5.1 Descriptive statistics
The demographic composition of the valid samples is shown in Table II. The spread of genders was 33.3 percent male and 66.7 percent female. The spread of students was: 35.8 percent freshmen, 22.8 percent sophomores, 23.6 percent juniors, and 17.9 percent seniors.

5.2 Validity and reliability analyses
Validity and reliability analyses were first conducted on the questionnaire to assess whether the influence of the contents on test results was within the tolerable error range. Validity tests seek to examine the level of agreement between the participants' comprehension and the definitions of the dimension. Reliability tests are used to examine whether the repeated measurements of same dimension items are consistent (Hair *et al.*, 2010). Validity analysis refers to whether the participants understand the similarity between items in the same dimension. An average variance extracted (AVE) larger or equal to 0.5 is applied as the assessment standard. The higher the numeric value, the better the convergent validity is (Bagozzi and Yi, 1988). A composite reliability (CR) larger than or equal to 0.7 is adopted as the standard for testing the

	Frequency	Percentage
Gender		
Female	82	66.7
Male	41	33.3
Total	123	100.0
Students		
Freshmen	44	35.8
Sophomores	28	22.8
Juniors	29	23.6
Seniors	22	17.9
Total	123	100.0

Table II.
Demographic statistics of the respondents

consistency of repeated measurements in different dimensions. The larger the value, the higher the consistency (Bagozzi and Yi, 1988). Table III shows that the CR in the present study ranges between 0.903 and 0.942, while the AVE is from 0.610 to 0.729. The test results are all larger than the suggested value, and thus the questionnaire has good convergent validity and reliability.

5.3 Path coefficient and R^2 analysis

The PLS-SEM method is applied to verify this study's framework, and path coefficients and t-values are adopted to analyze the influence and significance of various dimensions to test whether the hypotheses are valid. R^2 is used to assess the explanatory power of the model. The larger the R^2 value, the stronger the explanatory

Construct	Item	Factor loading	Composite reliability	R^2	Average variance extracted
Information quality (IQ)	IQ1	0.739	0.911		0.630
	IQ2	0.782			
	IQ3	0.794			
	IQ4	0.816			
	IQ5	0.820			
	IQ6	0.809			
Service quality (SVQ)	SVQ1	0.843	0.928		0.683
	SVQ2	0.780			
	SVQ3	0.802			
	SVQ4	0.868			
	SVQ5	0.801			
	SVQ6	0.842			
System quality (SQ)	SQ1	0.692	0.903		0.610
	SQ2	0.775			
	SQ3	0.790			
	SQ4	0.792			
	SQ5	0.815			
	SQ6	0.814			
Intention to use (IU)	IU1	0.827	0.942	0.800	0.729
	IU2	0.850			
	IU3	0.810			
	IU4	0.902			
	IU5	0.856			
	IU6	0.877			
User satisfaction (US)	US1	0.833	0.924	0.818	0.670
	US2	0.806			
	US3	0.794			
	US4	0.807			
	US5	0.806			
	US6	0.863			
Net benefits (NB)	NB1	0.772	0.934	0.779	0.703
	NB2	0.823			
	NB3	0.870			
	NB4	0.860			
	NB5	0.850			
	NB6	0.853			

Table III.
Results of reliability and validity analyses

power for predicting the influence of each dimension on the dependent variables, and the higher the practical value will be (Hair *et al.*, 2010).

Table IV shows that *H1b*, *H2a*, *H2b*, *H4a*, *H5a*, and *H5c* achieve significance, indicating that system quality and service quality have a positive influence on user satisfaction with the cloud e-bookcase, and service quality has a positive influence on intention to use the cloud e-bookcase. Intention to use and user satisfaction with the cloud e-bookcase both have a positive influence on the benefits of use. The path coefficients are, respectively, 0.218, 0.234, 0.449, 0.410, 0.472, and 0.466. *H1a*, *H3a*, *H3b*, and *H5b* do not achieve significance.

The R^2 reaches 81.8 percent after user satisfaction is affected by service quality, system quality, and benefits of use. The R^2 reaches 80.0 percent after intention to use the system is affected by service quality and benefits of use. Therefore, the explanatory power for intention to use and user satisfaction is acceptable. The goal of the examination of this model, the R^2 of net benefits, achieves 77.9 percent, and so the explanatory power is decent. This study thus proves that the success model for the cloud e-bookcase has practical value. The numeric values from the analysis are shown in Figure 3. Solid lines indicate significance, and dotted lines indicate insignificance.

6. Discussion and conclusion

University students who need to search the literature for references and information were chosen as the participants in this study, and the IS success model is applied to evaluate the influence of the search process of using mobile devices to operate a cloud e-bookcase. Participants' understanding of and attitude toward the system were examined. The results of the analyses show that seven of the hypotheses are supported, and four are not. The results are discussed in more detail below.

System quality has no significant, positive influence on intention to use the system (β-value = 0.172, t-value = 1.639), but it has a significant positive influence on user satisfaction (β-value = 0.218, t-value = 2.310). This means that the display of search results on mobile devices, and the performance and smoothness of the operation, have a positive influence on user satisfaction. Therefore, improvements in system quality are required in order to upgrade user satisfaction. However, the influence on users' intention to use the system is not significant. It could be that users do not think the system's quality has any effect on their intention to use the system or their attitude toward it. Continuous improvements to system quality so that it can better support mobile devices is thus suggested, in order to increase user satisfaction. At the same

Hypothesis	Relationship	t-Value	Path coefficient (β-value)	Result
H1a	SQ → IU	1.639	0.172	Not supported
H1b	SQ → US	2.310	0.218	Supported
H2a	SVQ → IU	2.201	0.234	Supported
H2b	SVQ → US	3.194	0.240	Supported
H3a	IQ → IU	0.196	−0.019	Not supported
H3b	IQ → US	0.902	0.078	Not supported
H4a	IU → NB	3.790	0.449	Supported
H4b	NB → IU	3.981	0.410	Supported
H5a	US → NB	3.910	0.472	Supported
H5b	US → IU	1.564	0.177	Not supported
H5c	NB → US	5.808	0.466	Supported

Table IV.
Results of the structural model examination
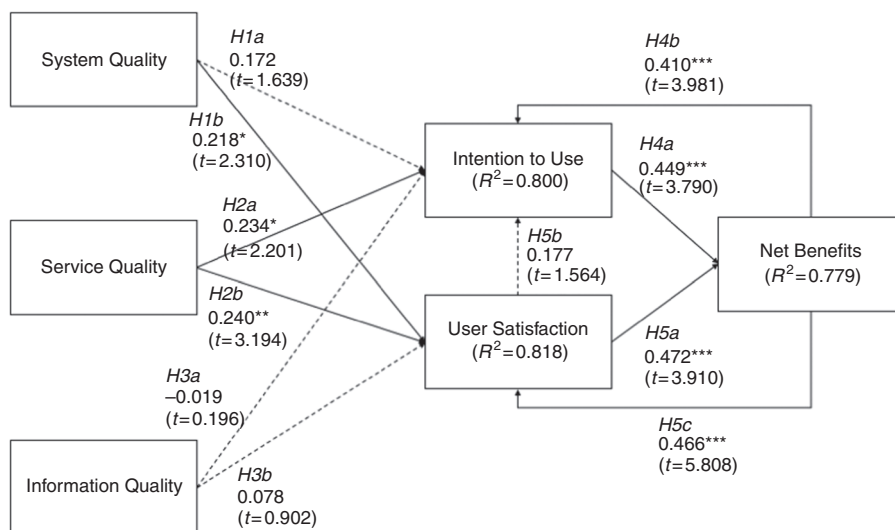
Notes: *$p<0.05$, $t>1.96$; **$p<0.01$, $t>2.58$; ***$p<0.001$, $t>3.29$

Figure 3.
Results of the
examining the
research model
along with the
related *t*-values

time, it is also necessary to examine whether intention to use the system is affected by other factors, so that the relationship between system quality and intention to use the cloud e-bookcase can be better understood.

Information quality has no significant, positive influence on system use (β value $= -0.019$, *t*-value $= 0.196$) or user satisfaction (β-value $= 0.078$, *t*-value $= 0.902$), indicating that information accuracy and comprehensibility do not have a positive influence on intention to use or user satisfaction. It could be that users do not think information quality is a factor that influences their intention to use the system or their satisfaction. However, a more comprehensive examination is required to determine whether there is another influence at play here, so that we may better understand the relationship between information quality and use of the cloud e-bookcase system.

Service quality has a significant, positive influence on intention to use the system (β-value $= 0.234$, *t*-value $= 2.201$) and user satisfaction (β-value $= 0.240$, *t*-value $= 3.194$), indicating that the system's guide service or replies to questions in the discussion zone can, indeed, have a positive influence on intention to use and user satisfaction. Therefore, improvements in service quality are necessary to increase user satisfaction and intention to use. It is suggested that the guide contents be continuously refined, that designated personnel should be trained to provide instant replies, and the response speed and quality in the discussion zone be upgraded.

Intention to use has a significant, positive influence on the net benefits (β-value $= 0.449$, *t*-value $= 3.790$), and the net benefits have a significant, positive influence on intention to use the system (β-value $= 0.410$, *t*-value $= 3.981$), indicating that users think intention to use the system and its net benefits are related. Use of the system will create actual benefits, and actual benefits will affect users' evaluation of their intention to use the system. And according to the definition of the intention to use "Users' evaluations of their attitudes and conduct when using the information system" and "refers to users' attitudes toward the results of use, including frequency of use, purpose of use, and willingness to use." It means an indicator that measures user

acceptance and adoption to the system. According the results, service quality, net benefits and intention to use can be used to measure whether the user acceptance and adoption to the system because intention to use is affected by service quality and net benefits. Therefore, this study suggests the adoption of intention to use as an indicator for evaluating whether new functions are appropriate additions to the system or not.

User satisfaction has no significant, positive influence on intention to use (β-value $= 0.177$, t-value $= 1.564$), but it does have a positive influence on the net benefit (β-value $= 0.472$, t-value $= 3.910$), indicating that users think user satisfaction and intention to use are different concepts. In other words, the satisfaction derived from the benefits of using the system has no effect on users' intention to use it. However, the net benefit will be affected, meaning that users think satisfaction has an effect on their understanding of the net benefits. Meanwhile, the net benefits have a significant, positive influence on user satisfaction (β-value $= 0.466$, t-value $= 5.808$), indicating that they can affect this construct.

Therefore, this study suggests that evaluations can be conducted according to the results of user satisfaction surveys, in order to test whether new functions will satisfy users, and according to the results of intention to use, in order to test whether user will accept and adopt the system.

The contributions of this study are as follows:

- A cloud e-bookcase system is implemented and the IS success model is used to evaluate it. The overall explanatory power achieves 77.9 percent, indicating the practical value of this approach. In addition, user satisfaction and intention to use are independent from each other, and thus the results caused by different factors can be clearly identified, which can help in the evaluation of system development and the solutions that are proposed to any problems that arise.

- Based on an analysis of the results, it can be confirmed that users think that e-book reading when using mobile devices to operate the functions of the "cloud e-bookcase" has an influence on their satisfaction, intention to use the system, and the creation of benefits.

- In the future, this study suggests that measure user satisfaction, acceptance, or adoption on the cloud e-bookcase system can be conducted by user satisfaction and intention to use.

Finally, this study eliminated 78 copies of the questionnaire with missing or regular values, with 123 valid copies remaining, yielding a valid response rate of 41 percent. This is a low response rate, and thus is one limitation of this study. Therefore, future research in this area is needed to identify other, influential factors that the current work did not investigate.

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Further reading

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Appendix

Information quality

IQ1. I can understand the information of e-books' title, introduction and icon on the "Cloud e-Bookcase system."

IQ2. I think the "Cloud e-Bookcase system" provide clear e-book contents presented on mobile devices.

IQ3. I think the "Cloud e-Bookcase system" provides e-Book contents on mobile devices in a way that is easy to read.

IQ4. I think the "Cloud e-Bookcase system" provides e-Book contents that are correct.

IQ5. I think the "Cloud e-Bookcase system" can search for e-Books' contents based on the keywords I enter.

IQ6. Overall, I can accept the information quality of the "Cloud e-Bookcase system."

System quality

SQ1. I think the "Cloud e-Bookcase system" provides an e-Books' interface on mobile devices which is easy to use.

SQ2. I think the "Cloud e-Bookcase system" provides e-Books' contents on mobile devices which will not slow down my reading.

SQ3. I think the responses to searches search on the "Cloud e-Bookcase system" which pare resented on mobile devices are rapid and accurate.

SQ4. I think the "Cloud e-Bookcase system" which run on mobile devices does not crash frequently.

SQ5. I think layout on the "Cloud e-Bookcase system" on mobile devices is not crowded.

SQ6. Overall, I can accept the system quality of the "Cloud e-Bookcase system."

Service quality

SVQ1. I think the manual which the "Cloud e-Bookcase system" provides is sufficient and provides expert guidance.

SVQ2. I think the guidelines on the "Cloud e-Bookcase system" are clear and easy to understand.

SVQ3. I think the operation training for the "Cloud e-Bookcase system" let me understand how to use the system.

SVQ4. Responses to the questions I asked on the forum of the "Cloud e-Bookcase system" were posted rapidly.

SVQ5. Responses to the questions I asked on the forum of the "Cloud e-Bookcase system" were accurate.

SVQ6. Overall, I can accept the service quality of the "Cloud e-Bookcase system."

Intention to use

IU1. I am willing to use the "Cloud e-Bookcase system" which runs on mobile devices to access e-books.

IU2. When using the mobile device to read e-books, I frequently use the "Cloud e-Bookcase system."

IU3. I have used all the functions of the "Cloud e-Bookcase system."

IU4. I am willing to continue using the "Cloud e-Bookcase system" on mobile devices to read e-books.

IU5. I am willing to recommend that friends use the "Cloud e-Bookcase system" on mobile devices to read e-books.

IU6. Overall, I intend to keep using the "Cloud e-Bookcase system" on mobile devices.

User satisfaction

US1. I am satisfied with the search function which the "Cloud e-Bookcase system" provides on mobile devices.

US2. I am satisfied with the e-book information on the "Cloud e-Bookcase system" which is presented on mobile devices.

US3. I am satisfied with the e-books' contents on the "Cloud e-Bookcase system" which are presented on mobile devices.

US4. I am satisfied with the interface on the "Cloud e-Bookcase system" which is presented on mobile devices.

US5. I am satisfied with the quality of problem-solving on the "Cloud e-Bookcase system."

US6. Overall, I am satisfied with using the "Cloud e-Bookcase system."

Net benefits

NB1. I think e-book information on the "Cloud e-Bookcase system" could help me understand the e-books' contents.

NB2. I think the search function which the "Cloud e-Bookcase system" provides on mobile devices could save time when searching e-books' contents.

NB3. I think the "Cloud e-Bookcase system" could encourage me to read more e-books on mobile devices.

NB4. I think I could use the "Cloud e-Bookcase system" to find the e-book I am interested in.

NB5. I think I could use the "Cloud e-Bookcase system" to conveniently access the e-books I want.

NB6. Overall, I obtained benefits from using the "Cloud e-Bookcase system."

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