Extending TAM to Understand Library User Acceptance of E-Books in Tanzania

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ABSTRACT

This study was conducted to examine antecedents that influence acceptance of e-books in Tanzania. The study extended TAM model with accessibility, perceived cost, and technological support to develop a conceptual model that was used to examine acceptance of e-books in Tanzania. Quantitative study was conducted using self-administered questionnaire in which snowball technique was used to identify potential respondents. The questionnaires were distributed using online Google form, and 314 usable responses were collected. A multivariate data analysis technique known as structural equation modeling (SEM) was employed to establish relationships between the hypothesized relationships. The findings show that perceived ease-of-use, accessibility, and technical support have significant effect on acceptance of e-books in Tanzania. Several implications that will lead to acceptance of e-books in Tanzania are provided.

KEYWORDS

Accessibility, E-Books, Library, Perceived Cost, Structural Equation Modelling, TAM, Tanzania, Technical Support

INTRODUCTION

Libraries serve as an important source of information to facilitate teaching and learning activities in academic and research institutions (Maitaouthong, Tuamsuk, & Tachamanee, 2012). Through libraries, learners, academicians, and researchers expect to acquire knowledge found on different related resources such as books and journals. Furthermore, studies have shown that quick access to library resources tends to accelerate teaching, consultancy and research activities (Khan & Bhatti, 2012; Khan, Bhatti, Khan, & Ismail, 2014). Therefore, to achieve academic and research institutions' missions, adequate library resources should be in place. Resources in libraries are categorized as printed and electronic resources (Besen & Kirby, 2012). Due to the development of information and communication technology (ICT), the use of electronic resources, particularly electronic books (e-books), in libraries has been proved effective and efficient (Wu & Chen, 2011). Most of the academic and research institutions have adopted e-books to facilitate learning and teaching activities.

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Previous studies have shown that the use of e-books is becoming popular in delivery of information and it is expected that will replace printed books (Letchumanan & Tarmizi, 2011; Lin, Tzeng, Chin, & Chang, 2010).

Several academic and research institutions in developing countries have adopted e-books as one of the electronic learning strategies. However, the adoption of e-books is considered to be slower than anticipated (Allen & Kaddu, 2014; Maduku, 2015). Studies have shown that accessibility, usability, perceived cost and lack of familiarity with e-book technology tend to limit the acceptance and adoption of e-books (Allen & Kaddu, 2014; Anuradha & Usha, 2006; Roesnita & Zainab, 2013). Furthermore, previous studies have shown that the success of e-book technology is highly depending on the library users' acceptance (Ahmad, 2015; Jin, 2014). Without an understanding of factors that influence the adoption of e-book technology, e-books could remain unnoticed and underused (Hong, Thong, & Wai-Man Wong, 2002). This study extends TAM theory with external factors that are accessibility, perceived cost and technological support to examine empirically the adoption of e-books in Tanzania.

The objectives of this study are: (1) to assess whether the identified external factors could have a significant effect on perceived usefulness and perceived ease-of-use of e-book technology in Tanzania; and (2) to examine if perceived usefulness and perceived ease-of-use could lead library users to form behavioral intentions to adopt e-book technology in Tanzania. This study is useful in the following ways. First, it addresses the existing knowledge gap on factors that could influence the adoption of e-books technology among library users particularly in developing countries. Second, the implications of the study could assist policymakers and practitioners in academic and research institutions in better understanding how to integrate e-book technology into their curriculum, hence increase the adoption of e-book technology.

LITERATURE REVIEW

The Need for E-Books in Academic and Research Institutions

Technological developments have changed the nature and means used to access digital contents and has opened up new opportunities for the publishing industry (Vasileiou, Hartley, & Rowley, 2009). Renear and Salo (2003) have noted, "book-like electronic reading, in particular, is a rapidly growing commercial phenomenon, with a wide variety of devices, software, and distribution systems, and a wide range of content genres." The adoption of e-books for e-learning possess significant consequences for academic libraries, including acquisition policies, discovery, pricing and licensing, downloading and printing, and cataloguing processes (Bakkalbasi & Goertzen, 2015; Vasileiou et al., 2009).

The use of printed books in libraries has been considered ineffective and inefficient. This is due to the fact that a large number of printed copies are required to be in the library in order to serve large numbers of library users (Renner, 2009). This could be difficult because the number of learners in most of the universities, particularly in developing countries, has recently increased (Burnett, 2013). Furthermore, printed books require large physical spaces for storage and may not be accessible for 24 hours (Renner, 2009; Roesnita & Zainab, 2013). Also, printed books may be misplaced, degrade or otherwise lost or stolen, which may requires the library to purchase new copies of the same book (Anuradha & Usha, 2006; Roesnita & Zainab, 2013). This tends to be difficult since most libraries have limited financial resources (Burnett, 2013; Mcharazo & Olden, 2016). The evolution of e-book technology could address these challenges by providing a more versatile and flexible mechanism for learners to access and use library resources. A study conducted by Mcharazo and Olden (2016) recommends the use of electronic resources in libraries to enhance efficiency and effectiveness.

Academic libraries have traditionally played an important role in providing access to and disseminating information across learning and research communities. That role has extended to facilitating access to electronic resources such as e-journals and e-books through innovative technologies. Electronic journals have been used by scholars and professionals for more than a decade

and have firmly established themselves as crucial resources for libraries and their users. More recently, there has been an expansion in book publishing, with some attractive e-book packages offered to public and academic libraries. Although both publishers and libraries are unsure about the future for and the impact of e-books, there is increasing awareness that e-books demand further attention (Vassiliou & Rowley, 2008). Currently, e-books can be accessed in different file formats such as Adobe Acrobat Reader, Microsoft Reader, Palm Reader, VitalSource, Plain Text, MobiPocket, and HTML, and read using specially gadgets such as PCs, PDAs, Blackberries, Pocket PCs, Tablets, Sony Readers, mobile phones iPods and Kindle (Vasileiou et al., 2009).

Over the past decade, electronic books (e-books) have become increasingly popular in the academic community. Due to their popularity, several higher learning institutions in Tanzania have embarked in using e-books parallel with the traditional book formats (textbooks). This gives the readers flexibility to choose and switch between the two book formats. A majority of the e-books used in Tanzania higher learning institutions are written in English.

The e-book is defined as any content that is recognizably “book-like,” regardless of size, origin or composition made available electronically for reference or reading on any device that includes a screen (Besen & Kirby, 2012). Although the idea of e-books is not new, debate still exists on the definition and generally what constitutes an e-book (Tedd, 2005). For example, Lynch (2001) defines e-book to refer to either an individual work in a digital format or a hardware device used to read books in digital format. This definition ties ambiguously two concepts together: digital content and hardware used to read the e-book. The ambiguity of the definition of e-books is largely attributed to the rapid change of information and communication technologies (ICT) (Ghaebi & Fahimifar, 2011).

In an attempt to achieve consensus, Vassiliou and Rowley (2008) researched key contents of the existing definitions of the e-book. The findings of their research indicate that the definition of the e-book includes the following: the digital nature of e-books, comparison to the printed book, some indication of the content of the e-book, and some suggestion to e-book technologies (Ghaebi & Fahimifar, 2011). Based on their findings, they suggested the following definitions bundled into two parts:

1. “An e-book is a digital object with textual and/or other content, which arises as a result of integrating the familiar concept of a book with features that can be provided in an electronic environment.”
2. “E-books, typically have in-use features such as search and cross-reference functions, hypertext links, bookmarks, annotations, highlights, multimedia objects and interactive tools.”

One accesses e-books by using personal computers, netbooks, PDA and smartphones. Furthermore, dedicated devices known as e-book readers or e-book devices are used to access e-book resources. The most used e-book reader device is the Kindle e-reader developed by Amazon. The advantage of using dedicated devices includes portability and readability (Jin, 2014; Shin, 2011). Further, e-books are published and accessed in different accesses models and forms such as online access model and offline access model, downloaded the e-book on specially designed gadgets and downloaded –e-books in CD ROMS and DVD (Ghaebi & Fahimifar, 2011).

Nowadays, the e-book business has intensified with the advent of reading e-books on mobile devices such as e-readers, smartphones, and tablets. Thus, users can read e-books anytime and anywhere. These convenient devices bring e-books into people’s lives, and almost all online bookstores are adding the option to purchase e-books in addition to physical books (Huang, Shiau, & Lin, 2017).

The use of e-books allows library users to access the library resources outside of the library premises anytime, anywhere (Smeda, Shiratuddin, & Wong, 2015). Furthermore, studies have shown that advantages such as easy navigation, up-to-date contents, simultaneous access, easy keyword or phrase search also could increase the use of e-books in academic and research institutions (Renner, 2009; Waller, 2013). Especially in the academic environment, the use of textbooks cannot

accommodate some situations. For example, an instructor is limited when using textbooks in a situation whereby there is a need to select sections from different textbooks to cover topics for a particular course. Using e-books could easily help the instructor to search the sections of interest from different textbooks (McFall, 2005).

Other advantages of e-books include searchability, convenience, download-ability, space-saving, anytime availability, and helpful features, whereas the disadvantages include safety concerns, durability, compatibility, reduced user concentration, and need for equipment (Jeong, 2012).

Despite the fact that most of the studies have examined the adoption of e-books technology (Hong et al., 2002; Jin, 2014; Lin et al., 2010; Poon, 2014; Shin, 2011), most of these studies have examined the adoption of the said technology in middle and higher-income countries. There is scant empirical literature on the e-books users' behavior in developing countries where most of the library users are not technology perceptive. Thus, an empirical study is needed to examine the adoption of e-books in developing countries.

Technology Adoption Theories

Several technology adoption theories such as theory reasoned action, the theory of planned behavior and the technology acceptance model (TAM) have been widely used to examine users' acceptance behavior in a different context. TAM is widely used because of its high explanatory power of variance as compared to another model such as TRA and TPB (Abukhzam & Lee, 2010; Hong et al., 2002; Poon, 2014). TAM was specifically developed to address the adoption of information technology (Davis, 1989). TAM posits that users' behavioral intention to adopt information technology is influenced by two salient belief which is perceived usefulness and perceived ease-of-use (Davis, 1989). Perceived usefulness is the extent to which an individual perceives that using technology would enhance his or her job performance. Perceived ease-of-use is the extent to which an individual perceives the use of technology will require less mental and physical effort (Davis, 1989). TAM theorizes that an individual belief is mostly influenced by external factors (Park, 2009).

TAM has been used extensively to study technology acceptance in different contexts. However, in the context of e-books adoption and acceptance, TAM has not been extensively applied (Letchumanan & Tarmizi, 2011b). Two categories of studies can be seen in the e-book adoption literature portraying the manner in which TAM was applied. The first category includes studies that modify TAM by adding a new variable or construct, and the second category includes studies that modify TAM by integrating TAM with other theories.

For instance, Letchumanan and Tarmizi (2011) modified TAM by adding gender as an external variable when studying the intention of undergraduate engineering students in using e-books. Park, Sung and Cho (2018) modified TAM by including aspects of reading engagement, hardware features and text readability to understand reading experiences influencing the acceptance of devices used to read e-book among undergraduate and postgraduate students. In addition to exploring the perceptions of students of e-books, Nelson and Webb (2007) added technology characteristics and computer anxiety to TAM.

Examples of studies which modified TAM by integrating it with other theories include Aharony (2014) who integrated TAM with cognitive appraisal theory to assess the difference in e-book usage between students and information professionals, and Sungjoon Lee (2013) who integrated TAM with Diffusion of Innovation Theory (DIT) and Model of Innovation Resistance (MIR) just to mention a few. In the above studies, perceived usefulness and perceived ease of use were key predictors of e-book acceptance. The influence of these two constructs is not only seen in e-book acceptance studies but also in several other studies such as (Lee, Cheung, & Chen, 2005; Liu, Liao, & Peng, 2005; Selim, 2003). Consistency of these two constructs to predict the acceptance of different forms of technologies across different studies indicates their strength in predicting technology acceptance behavior.

CONCEPTUAL MODEL AND HYPOTHESES DEVELOPMENT

The current study adopts TAM to examine factors that may influence the adoption of e-books. TAM has been criticized for not providing external factors which could be used to explain why an individual could consider the technology to be useful and ease-of-use (Venkatesh & Davis, 2000). This makes TAM ineffective in examining the adoption of technology. Therefore, this study extends the model by using three external variables to examine the acceptance of e-books in Tanzania: accessibility; perceived cost; and technological support. By using these external variables, policymakers and systems developers could exert high control on the e-book users' beliefs, which in turn could influence the adoption of e-book technology.

Perceived Usefulness

Perceived Usefulness (PU) is defined as the extent to which an individual believes that using technology will improve his/her efficiency and work performance (Davis, 1985). Several studies have examined the influence of perceived usefulness and concluded that it has a positive and significant influence on behavioral intention (Ahmad & Khalid, 2017). In e-book adoption, perceived usefulness has been found to have a positive influence on behavioral intention of e-book readers (Elyazgi, Nilashi, Ibrahim, Rayhan, & Elyazgi, 2016; S Lee, 2013; Smeda et al., 2015). Therefore, the decision to adopt e-books is highly dependent on the users' belief that using e-books will improve their learning efficiency and performance. Based on that this study hypothesizes that:

H1: Perceived usefulness has a positive influence on library users' intention to adopt e-books

Perceived Ease of Use

Perceived Ease of Use (PEOU) is defined as the extent to which users believe that using a particular technology will be free from effort (Davis, 1985). Several researchers have demonstrated that there is a positive relationship between perceived ease of use and users' behavior intention to adopt e-book technology (Elyazgi et al., 2016; S Lee, 2013). Furthermore, studies have shown that when technology is perceived to be easy to use its usefulness also tends to increase (Lee, 2013; Smeda et al., 2015). Since e-book is a new technology in Tanzania, it will be better to examine if library users perceive e-books to be easy to use, and whether this perception could lead to their decision to adopt e-book technology. Based on this fact, this study hypothesizes:

H2: Perceived ease of use has a positive influence on library users' intention to adopt e-books

H3: Perceived ease of use has a positive influence on Perceived Usefulness of e-books

Perceived Cost

Perceived Cost (PC) is defined as the extent to which the users believe that using technology will have monetary cost implication (Lin & Luarn, 2005). Perceived cost is considered as one of the major factors which affect user's behavioral intention to use technology (Kuo & Yen, 2009). Various cost such as equipment cost and access cost may increase the usage cost of e-book technology and influence the behavioral intention to use the e-book technology. Different studies have examined the influence of perceived cost on behavioral intention and concluded that there is a significant negative influence relationship (Chiu, Bool, & Chiu, 2017; Kuo & Yen, 2009). Furthermore, studies have shown that the higher the cost of using technology such as an e-book, the less it will be useful to the adopters.

H4: Perceived cost has a negative influence on library users' intention to adopt e-books

H5: Perceived cost has a negative influence on the Perceived Usefulness of e-books

Accessibility

Accessibility is defined as the extent to which the system is available and conveniently accessible to many systems' users (Park, Roman, Lee, & Chung, 2009; Wixom & Todd, 2005). Several studies have shown that accessibility of the system tends to influence the user behavior intention to use the technology (Al-Aulamie, 2013). Furthermore, the greater accessibility of the systems could tend to increase its usefulness. Studies have shown that if libraries' systems are easy to access, then library users will tend to perceive that it is easy to use and useful to them (Al-Aulamie, 2013; Thong, Hong, & Tam, 2002). Based on the previous findings, this study predicts that:

H6: Accessibility has a positive influence on library users' intention to adopt e-books

H7: Accessibility has a positive influence on the Perceived Usefulness of e-books

H8: Accessibility has a positive influence on Perceived Ease-of-Use of e-books

Technical Support

Technical Support (TS) is defined as assistance provided to the users when using information systems, the support can be in form of a hotline, online support and machine-readable support (Abbad, Morris, Al-Ayyoub, & Abbad, 2009). Several scholars claim that most of the e-learning systems tend to fail when there is no adequate technical support to the e-learning system's users (Abbad et al., 2009; Soong, Chan, Chua, & Loh, 2001). Different studies have shown that technical support has a direct influence on the behavioral intention to adopt e-books technology (Abbad et al., 2009). Furthermore, past studies show that availability of adequate technical support tends to make the system to be easy to use as well as it improves use of the system (Abbad et al., 2009; Ngai, Poon, & Chan, 2007; Smeda et al., 2015) Based on the above facts, this study hypothesizes the following:

H9: Technical support has a positive influence on library users' intention to adopt e-books

H10: Technical support has a positive influence on the Perceived Usefulness of e-books

H11: Technical Support has a positive influence on Perceived Ease-of-Use of e-books

RESEARCH METHODOLOGY

Questionnaire Development

The questionnaire used in this study contains three main sections: introduction; demographic information; and measurement items. The introduction section introduces the research objectives and requests the respondents to provide honest answers instead of socially acceptable answers. All measurement items were borrowed from previous quantitative studies and slightly modified to suit the current context of the study. Specifically, measurement items for perceived usefulness and ease of use were borrowed from Davis (1989) and Jin (2014), accessibility from Al-Aulamie (2013), technical support from Ngai et al. (2007), perceived cost from Wu and Wang (2005) and behavior intention to adopt e-books from Jung, Olmsted, Park, and Kim (2011) and Sungjoon Lee (2013). All items were measured using a five-point Likert scale (1- Strongly Disagree to 5- Strongly Agree) to enable respondents to discriminate the available options and to increase the response rate (Dawes, 2008). A pre-testing survey was conducted by using 30 students to examine if demographic questions and questionnaire's items are clearly understood by students (Burns et al., 2008; Liang & Lu, 2013). Students were required to fill in the questionnaire and provide feedback on any item and section which are not clearly understood (Burns et al., 2008; Nulhusna, Sandhyaduhita, Hidayanto, & Phusavat, 2017). Feedback from students was used to improve the clarity and readability of the questionnaire used in the main survey. To enable fast and easy distribution of the questionnaire, an online survey tool (Google form) was used to design the main survey questionnaire (Burney, Ali, Ejaz, & Siddiqui,

2017; Karahoca, Karahoca, & Aksöz, 2018). Using Google Forms makes it easy for the researchers to distribute the survey link or URL and collect responses quickly from respondents.

Sample Selection

Survey data were collected from different higher learning Institutions in Tanzania. Since it was difficult to access the list of all registered students and staff in various institutions, the snowball-sampling technique was employed. The initially identified lecturers and students in different institutions were given the questionnaire URL link, requested to respond to the questionnaire, and forward the URL link to their respective class representative and ask them to fill in and forward to their respective WhatsApp groups (Bakar & Bidin, 2014). The WhatsApp application was used to distribute the survey link to various students' group. This is because studies have shown that most of the students in Tanzania are using WhatsApp groups to share various learning materials (Lubua, 2015; Mazana, 2018). Therefore, the Google Forms link or URL was shared through WhatsApp to all identified respondents. 327 responses were collected through Google Forms. After data cleaning 314 responses remained and were used for data analysis in this study. Table 1 shows that the majority of the students were males and students of higher learning institutions (76.4% and 80.9% respectively). Furthermore, Table 1 shows that most of the users access e-book contents on a weekly basis (43.3%) and most of them use smartphone devices (64.7%).

Data Analysis

The Structural Equation Modelling (SEM) technique was employed to estimate the hypothetical relationships because it is capable of addressing measurement errors from the observed variable hence produce more accurate estimations (Tomarken & Waller, 2005). Comparably, other statistical analyses for estimating hypothetical relationships such as multiple regressions are incapable of taking into account measurement errors from observed variables resulting into the incorrect estimation of correlations between observed variables which eventually could affect final results (Li & Lomax, 2017). Furthermore, SEM assesses all available relationships in a model simultaneously unlike other statistical analyses (Nachtigall, Kroehne, Funke, & Steyer, 2003). Since the objective of the study was to examine the hypothesized relationships from a well-established theory, then covariance-based

Table 1. Demographic information of respondents (n = 314)

Demographic	Category	Frequency	Percentage (%)
Gender	Male	240	76.4
	Female	74	23.6
Occupation	Students	254	80.9
	Lecturers/ Instructor	80	19.1
Frequency of using E-books	Daily	66	21.0
	Weekly	136	43.3
	Monthly	38	12.1
	Less often	74	25.5
Device	Dedicated devices (Such as Amazon Kindle)	2	0.60
	Smartphone	103	64.7
	Tablet	21	06.7
	Laptop	80	28.0

SEM (CB-SEM) was adopted. Before assessing the hypothetical relationships, data were checked for missing data and normality to ensure that our data satisfy the requirements for using SEM. Violating of data normality assumptions and the presence of missing values in the data set may severely affect the findings (Boomsma, 2013).

FINDINGS

Missing Data and Normality Testing Analysis

Data collected were analyzed for missing values. Thirteen (13) cases were discarded due to large missing data and suspicious patterns (Gaskin, 2016; Hair, Black, Babin, & Anderson, 2010). Fifteen (15) cases had a small number of missing values and therefore were not discarded. The Missing Completely at Random (MCAR) technique was applied to evaluate its effects on the final results (Little, 1988). The findings show that the missing data have a non-significant effect ($X^2=448.164$, $df=421$, $p=0.174$). Therefore, the missing values in the data set were replaced by using Expectation-Maximization (EM) methods (Moon, 1996). The collected data were also analyzed for data normality. The data were considered to be normally distributed if skewness and kurtosis have an absolute value of 2 and 3 respectively (Kline, 2015). The findings from this study show that the skewness value ranges between -1.67 and 0.73 while the kurtosis value ranges between -0.3378 to 2.582. These findings suggest that the data used in this study are normally distributed. Hence, data analysis using SEM can be conducted. Furthermore, the bootstrap procedure was adopted in order to make sure that the data normality's assumptions are not violated consistently with suggestions from Curran-Everett (2017), Nevitt and Hancock (2001) and Walker and Smith (2017).

Measurement Model Assessment

Confirmatory factor analysis was conducted to evaluate the reliability and validity of the measurement model using IBM AMOS 22. A variance input matrix with maximum likelihood method was used to estimate the parameters (Hair, Anderson, Tatham, & Black, 1998). The initial measurement model results show that the measurement model did not attain unidimensionality because five items loaded with values below the accepted threshold value of 0.6. Awang (2015) suggests that for the measurement model to attain unidimensionality all items with values below the acceptable threshold should be discarded. Therefore, all five (5) items were discarded in five iterations to improve the unidimensionality.

The measurement items for the adjusted measurement model (see Figure 1) demonstrated adequate loading values and significant chi-square (χ^2). However, for the model to be considered good, it must produce non-significant χ^2 that denotes that there is no significant difference between the data and the model (Hair et al., 2010). Nevertheless, when the sample size is large, the χ^2 is expected to be significant (Hair et al., 2010). Therefore, other indices such as normed chi-square (χ^2/df), Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Residual (SRMR), Comparative Fit Index (CFI) and Tuller-Lewis Index (TLI) were used in the assessment of model fitness as proposed by (Hu & Bentler, 1999). Figure 2 suggests that the model has attained the construct validity since all fit indices attained acceptable thresholds. Further analysis was conducted to examine convergent validity, discriminant validity and construct validity. Table 2 shows that composite reliability (CR) and average variance extract (AVE) are all above the required thresholds of 0.7 and 0.5 respectively (Awang, 2015). These results suggest that the model's variables are reliable for hypotheses testing. In addition, the square roots of all AVE (**bolded diagonal values**) are higher than respective values in its rows and columns that also indicate convergent and discriminant validity was achieved (Awang, 2015).

Figure 1. Proposed research conceptual model

Figure 2. Measurement Model Analysis (Notes: Cost: Perceived Cost; Usefulness: Perceived Usefulness; Intention: Behavior Intention; Support: Technical Support; Ease: Perceived Easy-of-Use)

Table 2. Construct Reliability, Convergent validity and discriminant validity

	CR	AVE	Ease	Cost	ACC	SUPP	USEF	INT
Ease	0.729	0.574	0.758					
Cost	0.795	0.564	0.287	0.751				
ACC	0.939	0.837	0.150	0.144	0.915			
SUPP	0.868	0.570	0.539	0.546	0.014	0.755		
USEF	0.898	0.641	0.732	0.347	0.008	0.617	0.801	
INT	0.844	0.577	0.695	0.377	0.146	0.696	0.623	0.760

Notes: CR: Composite Reliability; AVE: Average Variance Extract; Ease: Perceived Ease-of-Use; Cost: Perceived Cost; ACC: Accessibility; SUPP: Technical Support; USEF: Perceived Usefulness; INT: Behavior Intention

Structural Model Assessment

The structural model assessment was conducted to evaluate the predefined hypotheses. The initial evaluation of the model exhibit that the structural model has attained model fit since all required fit indices have attained acceptable thresholds (*see Figure 3*). The model has produced 64% ($R^2 = 0.64$) of the explanatory variance in consequence of the adoption of the e-book in Tanzania.

Path analyses were examined to evaluate the relationships between the variables. Table 3 shows that perceived ease-of-use has a positive significant effect on Behavior Intention ($\beta=0.398$, $p<0.0001$). Furthermore, perceived ease-of-use has positive significant effects on perceived usefulness ($\beta=0.468$, $p<0.0001$). Accessibility has positive significant effects on perceived ease-of-use ($\beta=0.187$, $p<0.0001$). Technical support has a significant positive influence on behavior intention ($\beta=0.612$,

Figure 3. Structural Model Analysis (Notes: Cost: Perceived Cost; Usefulness: Perceived Usefulness; Intention: Behavior Intention; Support: Technical Support; Ease: Perceived Easy-of-Use)

Table 3. Structural paths and hypotheses testing

	Hypotheses			Estimate	S.E.	C.R.	P-Value	Remarks
H1	Usefulness	→	Intention	0.063	0.113	0.559	0.576	Not Supported
H2	Ease of Use	→	Intention	0.398	0.102	3.918	***	Supported
H3	Ease of Use	→	Usefulness	0.468	0.07	6.666	***	Supported
H4	Cost	→	Intention	-0.021	0.064	-0.325	0.745	Not Supported
H5	Cost	→	Usefulness	0.025	0.051	0.488	0.625	Not Supported
H6	Accessibility	→	Intention	0.104	0.063	1.661	0.097	Not Supported
H7	Accessibility	→	Usefulness	0.092	0.05	1.838	0.066	Not Supported
H8	Accessibility	→	Ease of Use	0.187	0.08	2.34	0.019	Supported
H9	Support	→	Intention	0.612	0.11	5.551	***	Supported
H10	Support	→	Usefulness	0.318	0.086	3.714	***	Supported
H11	Support	→	Ease of Use	0.733	0.1	7.341	***	Supported

Notes: Cost: Perceived Cost; Usefulness: Perceived usefulness; Intention: Behavior Intention; Support: Technical support; Ease: Perceived easy-of-use *** $p < 0.001$

$p < 0.0001$). Technical support has positive significant effects on perceived usefulness ($\beta = 0.318$, $p < 0.0001$) and technical support has positive significant effects on perceived ease-of-use ($\beta = 0.733$, $p < 0.0001$). Therefore, H2, H3, H8, H9, H10 and H11 are supported. Contrary to prior expectations five hypotheses that are H1, H4, H5, H6 and H7 did, not produce a significant effect and, therefore, are rejected.

DISCUSSION

The study found that technical support is the highest determinant of behavior intention to accept e-books in Tanzania. This result suggests that the higher the rate of providing technical support, the higher the intention of library users to use e-books. This finding is in line with previous studies which asserted that technical support has a positive significant impact on the acceptance of e-learning (Abbad et al., 2009; Shuhaiber, 2016). Moreover, technical support was also found to have a significant impact on perceived usefulness and perceived ease-of-use. This means when library users perceive that there is adequate technical support, then they will perceive the e-book system to be a usefulness and easy to use. These findings are supported by previous studies conducted by Abbad, Morris and Al-Ayyoub (2009).

Perceived ease-of-use was found to influence behavioral intention to accept e-book technology. This means that the availability of less complexity e-book systems will highly influence the acceptance of e-book technology. Therefore, having usable e-book systems could influence the intention of library users to use e-book technology. This finding could be attributed to the fact that most of the students in higher learning institutions have low skills in using computer-related systems. Therefore, providing an interactive and usable system could assist learners to use e-book technology. This finding is supported by Elyazgi, et al. (2016).

Further, the findings reveal that perceived ease-of-use has a significant influence on perceived usefulness. However, perceived usefulness was not found to be a key determinant of the behavior intention of learners to use e-books. A possible explanation could be that students have a low level of knowledge on the benefits of using e-book technology (Hong et al., 2002). However, it was expected that in the end after the students have accumulated knowledge on the benefits of using the e-book, the influence of perceived ease-of-use would decrease while that of perceived usefulness would increase. This finding is in line with Hong et al. (2002) findings.

Furthermore, accessibility of the e-book systems is found to have an influence on perceived ease-of-use of the e-books. This means that students are very concerned with ease to access e-books as a motivator for them to use e-books. This could be attributed to technology status in Tanzania higher learning institutions, in which the accessibility of ICT systems and e-services is a problem due to unreliable internet service. Therefore, having an accessible e-book system available 24/7 could increase the intention to use an e-book. This finding supports previous findings, which show that accessibility is very important in the adoption of e-books technology and information systems in general (Al-Aulamie, 2013; Ahmad, 2015b).

Contrary to TAM, the relationship between perceived usefulness and intention to use e-books was not empirically confirmed because the correlation between these two constructs was weak and therefore could not produce enough explanatory power. Similarly, previous studies such as Koloseni & Mandari (2017), Jiang, Peng and Liu (2015), Koloseni and Mandari (2017) and Muñoz-Leiva, Hernández-Méndez and Sánchez-Fernández (2012) reached the same conclusion. Further, the relationships between perceived cost and intention to use e-books, and perceived costs and perceived usefulness of e-books were not confirmed empirically. Perhaps, since most of the students in e-learning possess a mobile device (with cheap internet packages provided by major telecom companies for universities) which they can use for reading e-books or can use available computers owned by higher learning Institutions, then cost was not an impediment for them to use e-books. Ultimately, the hypothetical

relationship between perceived cost and intention to use e-books and the perceived cost and perceived usefulness were rejected.

Lastly, consistent with Park (2009), we found that accessibility has no significant influence on the behavior intention to use e-books and on perceived usefulness of e-books. A possible explanation could be students are well aware of the usefulness (benefits) of e-books, therefore, in this case, perceived accessibility could not influence the perceptions of students on usefulness and eventually intend to use e-books.

CONTRIBUTION AND IMPLICATION

Most of the existing e-book adoption studies have been conducted in developed countries, which have sophisticated technologies and adequate facilities in HLI's. Therefore, the findings provided in this study will add more knowledge for researchers on the adoption of e-book technology in developing countries where e-book as a new ingredient in the e-learning platform is in infancy stages in HLI's.

Further, the extended TAM model provides new insight on how TAM is applied to examine the adoption of e-books in emerging technology context particularly in developing countries. On top of that, the three new constructs (perceived costs, accessibility and technological support) which were used to extend TAM in this study, resulted into a higher explanatory power ($R^2 = 0.64$) which according to Cohen (2013) indicates a substantial effect size our extended model can produce, hence justifying the validity of our extended model in e-books adoption.

Furthermore, this study has several implications to policymakers. Firstly, policymakers should concentrate on making sure that there is adequate technical support. This could be achieved by conducting regular training and providing support for 24/7 availability. Furthermore, the policymakers should establish online support that can enable students to find solutions quickly whenever there is a problem with the usage of e-book technologies.

Secondly, policymaker should make sure that electronic systems used to access e-book are accessible 24/7 and through different devices. Library users may be influenced by poor internet access and technological support. Therefore, policymakers should concentrate on the following: increasing the level of internet access; providing technical support immediately whenever there is downfall of the e-book system; and making e-book accessible through different formats such as DX Reader, Mobipocket, Microsoft Reader, PDF and Adobe eBook as well as through devices such as mobile phone, tablets, kindles etc. Furthermore, the library should increase the number of computers that can be used to access the e-book. This can be done by allowing any computer within the campus to access the e-book system.

Lastly, the e-book system should be easy to use by the library users. This can be achieved by providing a system with a help menu that could assist the user on how to access the electronic materials via the system. Furthermore, providing the system with user-friendly user-interface. This will reduce the disorientation and cognitive load allowing users to use the e-book system easily. The availability of e-book system personalization settings will allow library users to set their own preferences that will make the system to be easy to use.

LIMITATIONS AND FUTURE RESEARCH

The study has presented interesting finding, however, it is not free from limitations. The study is a cross-section study. This may limit the applicability of the findings due to behavioral changes of the respondents. Therefore, future studies should consider the use of longitudinal research examining the acceptance of e-book in Tanzania. Furthermore, the research has not included any moderating

variable in examining the acceptance of e-book, despite the importance of moderating factors in the acceptance of the technology. Therefore, future studies should consider moderating factors such as gender, age, etc. Lastly, the study shows that the model should be extended with more variables to better explanatory powers.

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