Acceptance and Use of Electronic Library Services in Ugandan Universities

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ABSTRACT
University libraries in Developing Countries (DCs), hampered by developmental problems, find it hard to provide electronic services. Donor communities have come in to bridge this technology gap by providing funds to university libraries for information technology infrastructure, enabling these university libraries to provide electronic library services to patrons. However, for these services to be utilized effectively, library end-users must accept and use them. To investigate this process in Uganda, this study modifies "The Unified Theory of Acceptance and Use of Technology" (UTAUT) by replacing "effort expectancy" and "voluntariness" with "relevancy", "awareness" and "benefits" factors. In so doing, we developed the Service Oriented UTAUT (SOUTAUT) model whose dependent constructs predict 133% of the variances in user acceptance and use of e-library services. The study revealed that relevancy moderated by awareness plays a major factor in acceptance and use of e-library services in DCs.

Categories and Subject Descriptors
H.3.7 Digital Libraries: user issues, H.1.1 Systems and Information Theory

General Terms
Design, Human Factors

Keywords
End-users, hybrid library services, technology acceptance, UTAUT, Uganda

1. INTRODUCTION
Library institutions are as old as human civilization. They were created to acquire, store, organize and preserve information for easy retrieval. Leedy [29] observes that in the past, information seekers spent much of their time pouring through card catalogue, and searching rows of stacks for material that may have been checked out by someone else. This process was time consuming. Information seekers knew a librarian as a source of assistance when the catalogue and guides were not useful. In addition, an information seeker often found vital information in a book located near the one he/she has used before, because library materials (books, journals) were organized by discipline. With the use of computers and networks, one can (in theory) get the information required electronically. The main role of a librarian is now to assist end-users in searching techniques and the use of the technology. ICTs are transforming the way library patrons' access and use libraries [23].

With the rapid growth in information systems, libraries have found it difficult to keep up with increased demands using manual operations. It is apparent that the concept of a library has had to change. The library information seeker is no longer confined to the walls of the library. The majority of university libraries are now hybrid libraries, depending on both electronic and print media based on networks and physical facilities [26]. Because of this, university libraries are able to offer their patrons remote access to information [43, 44]. Unlike in the traditional library where users are required to have the ability to read, in an e-library environment users require basic Information and Communication Technology (ICT) searching skills

The dimensions of end-user electronic library services studied in this paper include access to information using the new technologies, the manner in which librarians deliver the services, and the consistency and reliability of the services [13, 23, 40].

1.1. *Hybrid Libraries in Uganda's Universities*
The trend towards the delivery of information services in university libraries using ICT gathered momentum on the African Continent about 2000 [43]. This is particularly true in the case of online information access, CD-ROM databases and serial publications [25, 33]. With ICT innovations, especially the World Wide Web (www), the numerous university libraries in Uganda, introduced different means of delivering information to their patrons. In Makerere University Library (Mulib) for example, a dial-up Internet system was put in place for online searches and e-mail services on a commercial basis in 1997. In 2001 Mulib, in collaboration with the International Network for the Availability of Scientific Publications (INASP), and funding from Sida/SAREC obtained access to three electronic journals databases: The Ideal Library Database, EBSCO Host Database and Blackwells Database. Since then, many other development partners that include Carnegie Co. of NY., NORAD, African Development Bank (ADB) to mention only a few, have taken keen interest in developing and putting a lot of funds in both ICT

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infrastructure and electronic information resources (e-resources). The subscription to electronic journals and databases (now increased to 12) covers all university communities in Uganda and because of this most universities have been encouraged to build ICT infrastructure to enable their patrons' access to the resources. University libraries which also embarked on library automation include: Mulib, Uganda Martyrs University (UMU), Uganda Christian University (UCU), and Gulu University (GU). Yet no study has been carried out to ascertain the acceptance of e-library services by end-user communities.

2. THEORETICAL MODEL AND LITERATURE REVIEW

Most technology acceptance models and evaluation tools and methods for information systems (IS) and library systems (LS) were developed and tested in technologically advanced countries [e.g. 16, 18, 26, 35 & 45]. It is because of this that the investigators were inspired to assess levels of acceptance and use of e-library services by developing an acceptance and use measurement model using Uganda as a sample. The theoretical model selected for this investigation stems from the research of Venkatesh [52]. The Unified Theory of Acceptance and Use of Technology (UTAUT) model indicates that the behaviour intention to use or not to use a technology is influenced by a person's perceived independent factors of performance expectancy, effort expectancy, social influence and facilitating conditions with moderations from gender, age, experience and voluntariness of use. Although developed in USA, the UTAUT model can be extended to other contexts by expanding and modifying the model. The current investigation was structured on the UTAUT constructs of performance expectancy, social influence and facilitating conditions. The fourth construct, effort expectancy, was likely not to be a major influencing factor especially at the onset of the new technology innovations, since there are many other factors to be considered. Rather, the relevance of the material offered by the library was considered to be a major factor in the intention to use, as suggested by Nicholson [36] (Table 1). However, this factor (and possibly some or all of the other three factors) was likely to be moderated by the user's *awareness* of those offerings. Awareness in particularly was important in Developing Countries (DCs) where technology is not well developed [2, 7, 24], that most people cannot imagine a book being presented in a digital format on a computer screen. On the other hand, UTAUT's moderating variable of *voluntariness of use* is not needed in e-library users' acceptance model, since it is assumed to be no compulsion to use the services. The UTAUT model originates from Technology Acceptance Model (TAM) [15] and both models are further discussed in sections 2.2. and 2.1. respectively. Whereas TAM has been found to have an average predictive capacity of 35% [34 & 53] UTAUT is believed to have 70% predictive capacity, and this is reason for its choice for this study [52].

2.1. *Technology Acceptance Model (TAM)*

Technology acceptance is mainly about how people accept and use the introduced technology. Quite often people think that introducing new technology results in service acceptance and use. However, several research findings dispute the claim, showing that there are several other factors that affect technology acceptance and use [10]. Technology acceptance models are used to explain how users will accept and use a specific technology in future [31]. Developed by Davis [15], the Technology Acceptance Model (TAM) was based on Theory of Reasoned Action (TRA) [18]. Immediately after its development, TAM model became the accepted model for research in information systems adoption studies.

The foundation of the TAM model are two theoretical components: the *perceived usefulness* (PU) and the *perceived easy of use* (PEOU) of a technology (Figure 1). Perceived usefulness is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance," perceived ease of use as "the degree to which a person believes that using a particular system would be free of effort" [15]. Davis et al [16] found that PU and PEOU both affect people's intention to use, thereby, contributing to either usage or non-use. Their study indicates that usefulness was more significantly affected by usage than by ease of use.

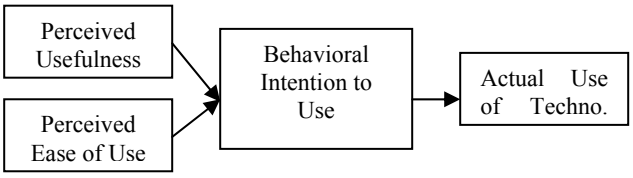


Figure 1. Technology Acceptance Model (TAM)

TAM's major strengths are that it provides factors which lead to IS acceptance, provides room for extensions and elaborations better than other competing models [49]. TAM's documented shortcomings are its failure to determine barriers that hinder technology adoption [49] and possibly its simplicity, which has led to its over-use at the expense of designing other models. TAM's adoption in IS research is documented in [28]. Because of TAM low predication levels, scholars have sought for better technology acceptance models [30, 39]. These studies call for a model that incorporates both human and social factors and hence the development of the Unified Theory of Acceptance and Use of Technology (UTAUT) model in 2003.

2.2. *The Unified Theory of Acceptance and Use of Technology (UTAUT) Model*

Different TAM models identified different determinants of acceptance of innovative technologies. Debates between these technology acceptance models resulted in many models being presented in IS research. A comparison of the determinants found in major acceptance and use models is presented in [28, 35, 52, 53]. Venkatesh [52] reviewed the user acceptance literature systematically by comparing eight previous models and the predictive factors specified in each model, and by so doing developed a new model the "Unified Theory of Acceptance and Use of Technology model" (UTAUT).

Determinants of acceptance of technology in UTAUT are: *performance expectancy* (PE), *effort expectancy* (EE), *social influence* (SI) and *facilitating conditions* (FC) (Figure 2): where *performance expectancy* means the degree to which a user believes that using a technology will provide gains in job performance; *effort expectancy* means the degree of ease in using the system; *social influence* means the degree to which an individual perceives that it is important that others believe that

they should use the new system; and *facilitating condition*s means the degree to which individual believe that the is organizational

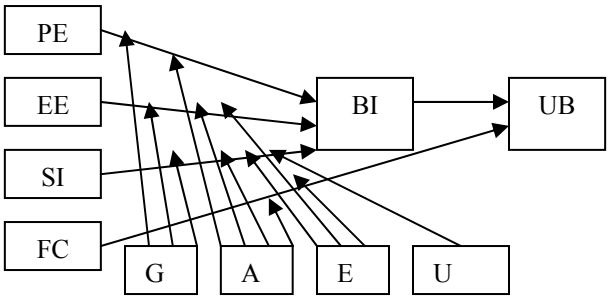


Figure 2. The UTAUT Model [52]

and technical support for using the system. The four determinants of user acceptance in UTAUT are moderated by *gender* (G), *age* (A), *experience* (E) and *voluntariness* (U) [52]. Venkatesh and others observe that gender and age have received very little attention in technology acceptance research, yet these variables were found to moderate most of UTAUT's four key relationships.

Since UTAUT was designed it has attracted many scholars in IS research. The scholars have validated the model [3, 31, 42 etc,] and extended it [11, 22, 35 and others] in different contexts, including multicultural studies [38], and all have found its constructs highly predictive [35]. This was the major motivator for its use in the current investigation.

2.3. *Motivators of E-library Services Acceptance and Usage.*

Some factors identified in library studies as promoters of or hindrances to ICT adoption and usage especially in digital libraries include: benefits/usefulness [4, 5, 17, 21, 32, 50, 51 and others]; awareness, [4, 6, 21, 36 and others]; relevance [26, 36, 37, 47, etc.] ease of use [9, 27, 37 and others] and many others**.** Further more, despite the fact that a lot of resources have been devoted to the development of hybrid library services, most of them remain underutilized [4, 5, 9, 17, 32, 46, 51 and many others]. The need to identify factors that increase user acceptance and use of hybrid library services is an issue of concern.

In an effort to design an evaluation model for libraries, Nicholson [36] developed a matrix conceptual framework for the holistic measurement and cumulative evaluation of library services (Table 1). He analyzed the relevance of information and introduces the concept of aboutness, which is based on a content match between the query and the documents being sought. In Nicholson's view, *aboutness* refers to the location of the information within the system (e-library in this case). *Usability* refers to how well the system can be used without one having problems. *Knowledge status* refers to how well one is aware of what is available, and is linked to the introduced concept of awareness. *Value of* works refers to the value/benefits that the material has to the user, which is largely influenced by the relevance of the work, and is linked to the introduced independent variable of relevancy where an information seeker puts in a query, the system searches through to answer the query. If e-library services are relevant or valuable to the information seeker, the query will be answered accordingly. Nicholson therefore views a user's use of library services as being affected by their awareness and by the relevance to them of the library's offerings. The two concepts of relevance and awareness were introduced in SOUTAUT constructs to make the research model relevant to e-library services.

Table 1: Measurement Matrix from Nicholson's Holistic Measurement Framework

Measurement	**Topic**	
Perspective	*System*	*Use*
Internal (Library System)	Procedures Standards	Recorded interactions with interface & Materials- Bibliomining
External (User)	Aboutness Usability	Knowledge status Value of works

3. OBJECTIVES, HYPOTHESES AND METHODOLOGY

The objective of this study was to investigate the influence of the modified UTAUT model on university e-library services using Uganda, a developing country, as a case study. In an effort to find out what determines end-users in Ugandan universities to adopt and use e-library services the study postulated five hypotheses based on the research model.

H1. Library end-users in universities accept and use electronic library services

H2. Relevance demonstrates an effect on behaviour intention to use e-library services

H3. Relevance moderated by awareness demonstrates an effect on behaviour intention to use e-library services

H4. The SOUTAUT constructs account for a significant percentage of variance on user intention to use e-library services

H5. Behaviour usage account for a significant percentage of the variance on perceived benefits.

3.1. *Methodology*

The data-gathering instrument used for this study was a self-administered survey questionnaire [8, 20]. In order to allow effective contribution to the refining of the statements in the tool, participants in the study were few - twenty in number. At each of the two pilot study sites, participants were grouped together and sensitized about the importance of the study. At the end of the sensitization session, participants were given the survey instrument and were asked to respond to the statements therein. The survey was intended to clarify any ambiguity or misunderstood statements in the interviews.

3.1.1. *Survey Instrument*

The questionnaire was based on the pre-existing tool developed by Venkatesh [52] and has been used by Anderson and Schwager [3], Moran [35] and others. This study modified a few parts of the instrument to make the tool more relevant to e-library end-users, taking into account the changed variables. The modified study instrument contained 39 statements with a five-point Likert scale where a one represented strongly agree and a five represented strongly disagree. All the statements and their wordings were

critically scrutinized and approved by the two academic supervisors and the reliability of constructs were determined after the data was entered, cleaned, analysed and validated.

3.1.2. *Data Analysis Software*

Data analysis for the original paper was done using SPSS and STATA software only which were found appropriate at the time because of their ability to model latent variables under both normal and non-normal conditions. However, with advice from scholars during the JCDL 07 Doctoral forum in Vancouver, Canada, the researchers were privileged to get PLS-Graph software developed purposely for analyzing relationships between constructs. Therefore, PLS-Graph was used when redefining the current document and hence some changes in the results.

3.1.3. *Limitations*

One of the limitations of the study is that respondents were few and all based in Uganda and therefore the findings may not be representative of Uganda and Developing Countries in particular. Further, the data-gathering instrument was a self-reporting and therefore, the responses may not be very correct.

4. DATA ANALYSIS

4.1 Demographic Data

Respondents' profiles are presented in Table 2.

4.1.2. *Availability of ICT Hardware in the Library*

In response to a question asking about the availability of nineteen ICT hardware in their library, more than 50% respondents from Makerere confirmed that computers, networked server, printers, LAN, World Wide Web, CD-ROM Readers and Writers, book check system, photocopying machines and power generator were available in their library. On the other hand, less than 49% respondents from Makerere recorded that laptops, scanners, LDC Projectors, video cameras, TV stations, microfilm readers, bar code readers, security check system and photo camera were available in the library. In Uganda Martyrs University (UMU), 52% of ICT hardware was recorded as being available in the UMU library.

4.1.3. Electronic Library Services Offered in the University.

Twenty-three e-library services were listed in the questionnaire and respondents were asked to tick those offered by their university. Of the 23 listed services, respondents from Makerere recorded yes to 8 e-library services, an indication that 35% of e-library services were offered in that university. Of the e-library services offered at Makerere, interlibrary loan services received the highest number of respondents (4) who said that the service was not offered in their university and another 4 respondents said that they were not sure of the availability of the service. On the other hand, respondents from UMU recorded yes to 13 e-library services, an indication that 57% of the e-library services were offered in that university. Of the e-library services in UMU, microfilming services received the highest number of respondents (5) who said that the service was not offered in their university, where as 4 respondents said that they were not sure of the availability of the service.

Table 2. Profile of Respondents

		No	%
University	Makerere University	9	45
	Uganda Martyrs University	11	55
Gender	Male	11	55
	Female	9	45
Status	University Staff	6	30
	Post Graduates Students	7	35
	Undergraduates Students	7	35
Educational Level	Masters Degree and Above	6	30
	Bachelor's Degree	10	50
	Advanced Level Certificate	4	20
Subject Discipline	Sciences	16	80
	Medicine	1	5
	Library Science	3	15
Computer or Laptop	Yes	15	75
	No	5	25
Computer Skills	Yes	20	100
	No	0	0
Awareness of Services	Yes	19	95
	No	1	5
Age Group	> 18-24	7	35
	>25-34	10	50
	>35-44	3	15

4.2. Data Validation

The data collected from the two pilot study sites were examined for mean, standard deviation, skewness, kurtosis, and Jarque-bera with the corresponding probabilities. With SOUTAUT survey data, most variables were normally distributed (p-value > 0.1). This phenomenon is contrary to other studies of technology acceptance [12, 35].

4.2.1. Instrument Validation

The survey instrument was evaluated using Principal Component Analysis (PCA). Under the analysis, the factor loadings and the corresponding factor scores (weights) for each variable were generated using SPSS. The dimensionalities of the thirty-nine statement items making up the eight constructs of the instrument were each subjected to factor analysis resulting in the removal of twelve items. Each construct variable was evaluated for Internal Consistency Factor loading (ICFL). Variables with ICFL less than 0.6 [12] were dropped and the model was re-estimated. During the process, the loading coefficients got lower and others increased. The process was continued until no ICFL from all construct variables was less than 0.6. The retained variables were then weighted and the group alpha for each construct met the reliability condition (Table 3, column 5). The retained constructs (column 1) together with the variables are shown in Table 3, column 4.

Table 3: Scale Reliabilities & Number of Retained Constructs

Constructs	Number of Questions	Reliability of the Group	No. of Questions Retained	Group Alpha
Awareness	4	0.593	2	0.70
Performance Expectancy	4	0.903	4	0.90
Relevancy	5	0.677	2	0.95
Social Influence	4	0.753	2	0.77
Facilitating Conditions	7	0.755	4	0.79
Behavioral Intentions	5	0.900	4	0.96
Use Behaviour	6	0.760	5	0.96
Expected Benefits from Use	4	0.940	4	0.79

Table 4: The Average Shared Variance (AVC) and Correlation Matrix of Latent Variables

Pooled Model (N=20)								
	AVC	**PE**	**RE**	**SI**	**FC**	**BI**	**UB**	**EB**
PE	0.78	**0.88**						
RE	0.96	0.85	**0.97**					
SI	0.99	(0.15)	(0.11)	**0.99**				
FC	0.63	0.09	(0.04)	(0.15)	**0.79**			
BI	0.93	(0.29)	(0.27)	(0.13)	(0.66)	**0.96**		
UB	0.84	(0.19)	(0.19)	(0.09)	(0.64)	0.49	**0.91**	
EB	0.88	(0.13)	(0.14)	(0.09)	(0.49)	0.23	0.91	**0.93**

Table 5: T-ratio Test and R^2 for the Model Dependent Constructs

Dependent construct	R^2	t-test	*P*
Behavioural Intentions	0.11	7.106	<0.001
Usage Behaviour	0.41	6.594	<0.001
Expected Benefits	0.81	5.597	<0.001

To measure the shared variance between the constructs and their measures [52], the discriminate validity of the model was evaluated. The discriminate validity further confirmed that the diagonal elements were significantly higher than the off diagonal values (i.e. correlation values) as shown in Table 4. Since all constructs had diagonal elements (in bold) greater than 0.5 and also greater than the correlation values, the instrument demonstrates successful discriminate validation acceptable levels of validity and reliability.

4.2.2. Reliability of the Variables and Constructs

Cronbach's alpha coefficient was used to measure the Internal Consistency (IC) of the model variables [14]. Variables with an alpha value greater than 0.70 (Table 3, column 3) (a common threshold for psychometric research) were used to evaluate and determine the latent variable observations in the model. All the variables except awareness and relevance met this level of reliability [35].

The SOUTAUT model comprises of eight latent variables, which could not be directly measured. The most common methods used for moderator analysis is regression analysis. The model was evaluated to determine the correctness of the model. Some non Parametric Predictive Measures were adopted such as the path coefficients and Squared Multiple Correlation (R^2) as generated by the PLS-Graph. The beta coefficients and Squared Multiple Correlation (R^2) were generated using regressions to determine the direct and interaction effects of independent factors on dependent factors and also to establish how well the model fit the hypothesized relationship. Also presented were the t-tests for determining the significance of the dependent model constructs in the model (Table 5). The bootstrap technique was used in PLS-Graph to handle model comparison tests and measure the strength of the relationship between constructs in the model [54]. The R^2 values are displayed below each dependent construct in Table 4. In case of e-library services analysis, dependent constructs are Behavioral Intentions (BI), Use Behaviour (UB) and Expected Benefits (EB).

4.2.3 *Significance of the Model Dependent Constructs.*

The significance measure was used to determine the level of inclination the dependent constructs have towards the acceptance and usage of electronic library services. This was done using the t-ratio test statistic on the dependent constructs (behavioural intentions use behaviour and expected benefits) and the results are summarized in Table 5.

5. HYPOTHESES ANALYSIS

There were five separate hypotheses in this study related to independent and dependent variables. The hypotheses were formed according to the modified UTAUT model and were to be supported or rejected by the data. Based on the results from the PLS-Graph the results are presented as predicated by the conceptual model path in Figure 3.

H_{a1} Library end-users in universities accept and use electronic library services.

The results from this study support this hypothesis in that end-users have an inclination of behavioural intention to adopt and use electronic library services at 11 percent, followed by relatively high inclination of usage behaviour at 41 percent and they highly expect the benefits at 81 percent giving the overall prediction of 133 percent as presented by the PLS-Graph analysis of the conceptual model in Figure 3. Moreover, all dependent constructs; behavioural intentions, use behaviour and expected benefits indicate a positive inclination towards the acceptance and usage of electronic library services. However, it should be noted that the path coefficients for the independent constructs (PE, Re, SI and FC) are all negative, indicating that although the overall model prediction is very high and positive, the independent constructs indicate to the contrary. This observation partially supports the hypothesis that library end-users in university accept and use electronic library services. With the data findings, hypothesis one is partially supported.

$H_{a2:}$ Relevancy demonstrates an effect on behavioral intentions to use e-library services.

Relevancy contributes 7 percent negatively towards behavioral intentions. This is just as insignificant as the social influence and performance constructs, which have negative contributions towards behavioural intent in this study. The researcher included this construct for the purposes of establishing end-users' opinion on how relevant electronic resources are towards their learning, teaching and research. Hypothesis two is not supported by the data. The implication could be that although end users expect to derive benefits from the use of electronic resources they do not perceive the resources as being relevant. However, as can be seen, hypothesis three where awareness moderates the relevance construct, the influence becomes quite significant ($p<0.01$), an implication that the services have not been given enough publicity for end-users to know that they are relevant to their work. Implications for the study are that the relevance construct at this time (until end-users get to know the value of e-library services) cannot work in isolation; it has to work with awareness. There are far reaching managerial implications for this finding, and are discussed in section 6.

H_{a3}: Relevancy moderated by awareness demonstrates an effect on behavioral intentions to use e- library services

This hypothesis is supported by the data because the effect of the relevancy construct being moderated by awareness on behavioural intent is positive (beta coefficient = 10.54) and significant ($p<0.01$) as per the regression results summarized in Table 5. Under the conceptual regression model, the relations of the different SOUTAUT factors were analyzed. Regression was made based on the structural form of the model which describes the nature of the variables as fixed factors, covariates and the possible measures of interaction effects.

H_{a4}: The SOUTAUT model constructs account for a significant percentage of the variance on the user intention to use electronic library services.

The model supports this hypothesis, as it is constructed from the study which supports 11 percent of the behavioural intention to accept and use electronic library services, followed by the 41 percent of the usage behaviour and 81 percent of the expected benefits to use electronic resources. Overall, the model predicts 133 percent of the intention to adopt and use electronic library services. The highest prediction levels (81 percent) by expected benefits implies that the respondents have high attraction towards electronic resources because they expect to derive benefits from them and also the high support could be as a result of service delivery mechanisms such as awareness and associated university support facilities.

H_{a5}: Behaviour usage account for a significant percentage of variation on perceived benefits.

Hypothesis five is supported by the path coefficient which acts as correlation between usage behaviour and expected benefits. Usage behaviour contributes positively 90 percent towards expected benefits. This contribution is the highest in the overall model setting. It is also worth noting that the researchers in this study included the expected benefits construct. The purpose was to ascertain any possible benefits end-users expected as a result of adopting and using e- library services.

6. DISCUSSION

The major goal for the pilot study was to develop a model and instrument to use on wider end-user communities in Uganda. It is, therefore, possible that the analyzed data for the pilot study which evaluated e-library services acceptance and usage may not easily be generalized to other ICTs and other Developing Countries. The model and the developed tool need be tested on a larger population in order to reinforce the external validity of the study. As a follow up, a large-scale study of 494-study sample from eight universities in Uganda is underway.

Considering the Service Oriented Unified Theory of Acceptance and Use of Technology (SOUTAUT) conceptual model in Figure 3, results indicate that behavioral intentions predicts 11 percent of the variance of end-users' acceptance and use of electronic library services, and use behaviour predicts 41 percent, while expected benefits predicts 81 percent of the variance of acceptance and usage. This shows that SOUTAUT model predicts 133 percent of end-users' acceptance and usage of technology (in this case electronic library services) in the two piloted universities. This is a contribution to literature and discussions on acceptance and use of technology as far as end-

Figure 3: The PLS-Graph Conceptual Model

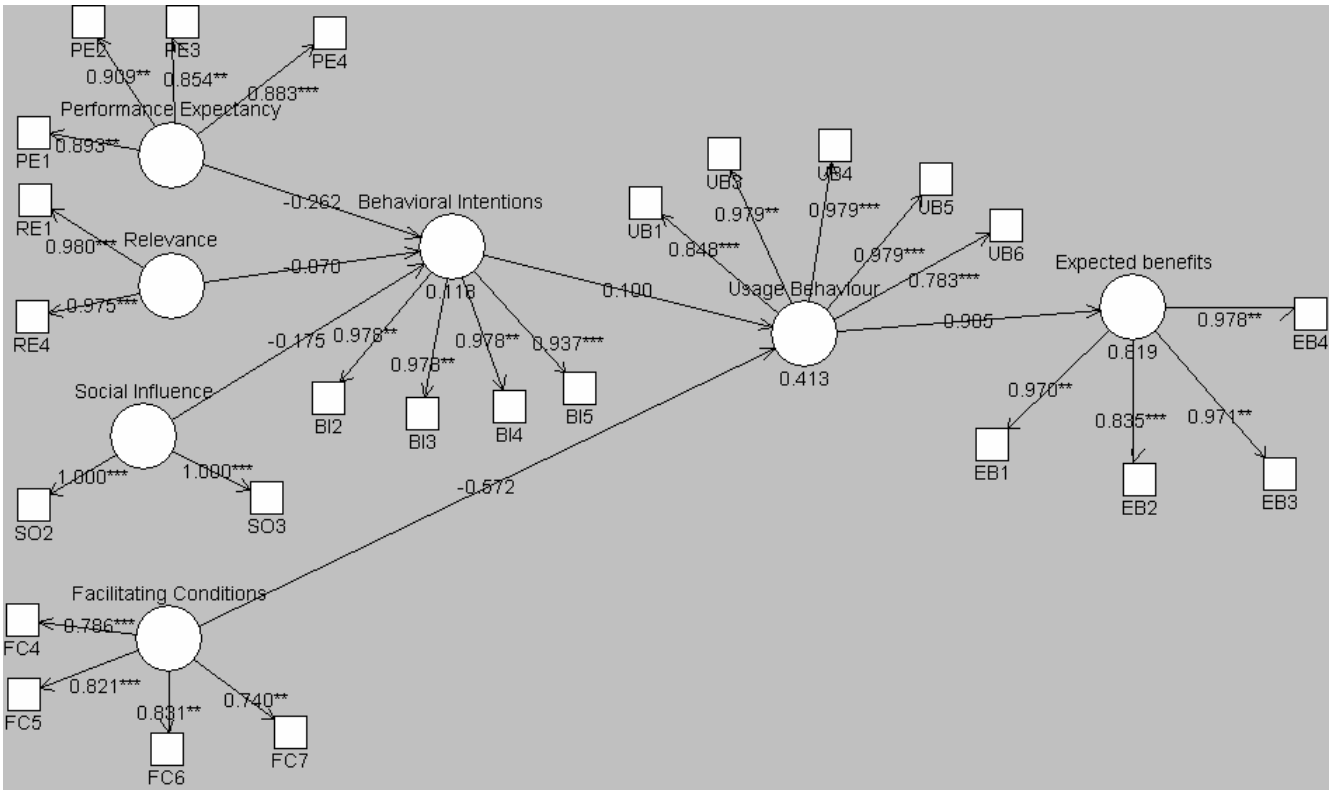
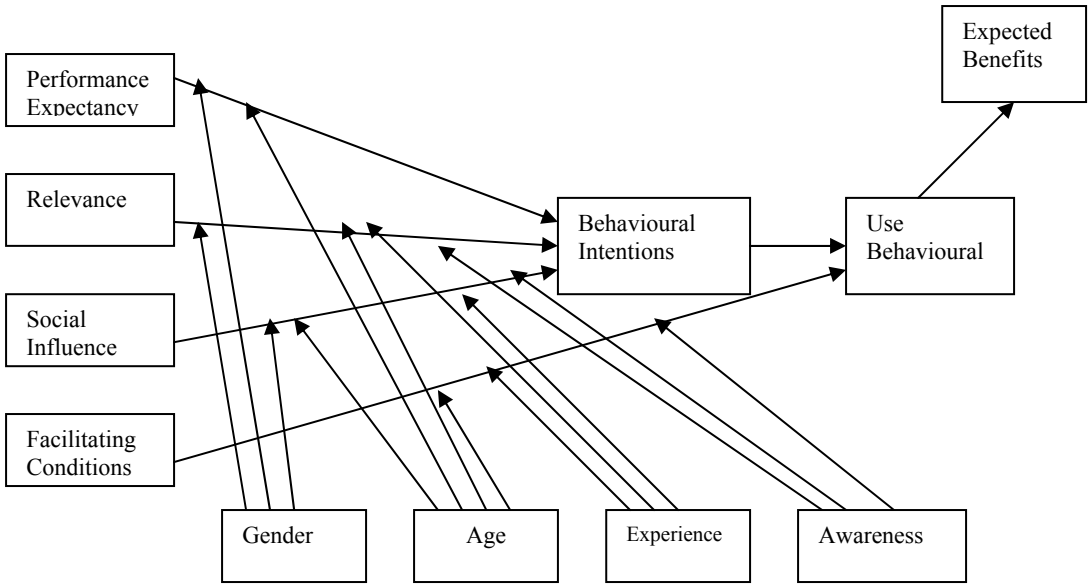


Figure 4: Illustration of SOUTAUT Structural Model



users are concerned. With increased use of ICTs in libraries, it is expected that the use of established research models like TAM, UTAUT and many others will provide more valuable insights into factors that influence users' adoption of e-library services [23].

Though the model is highly predictive by the dependent constructs as observed by R^2 , 133%, the path coefficient of expected benefits, end-users have really not felt the impact of e-library services in terms of performance expectancy (PE), Effort Expectancy (Re), social influence (SI) and facilitating conditions (FC). This may be because it was a bit too early for this type of study to be carried out in Uganda. It might be possible that the variables included in the pilot study model are not the only ones that could explain end-users' intention to adopt and use e-library services. It is recommended that future research include additional factors to the model.

Further more, because the respondents in this pilot-study were very few (N=20), compared to the number of end-users of electronic library services in Uganda (student population in only 8 universities was 67,571 as per 2004/2005 academic year) it may be reasonable to say that the sample is not representative of university communities in Uganda. In this case, the conclusions and implications of this study with regard to e-library services adoption and use in Uganda should be taken with caution. As we wait for results from the full scale study, based on finding from this pre-test, it is recommended that a similar study be carried out in the near future to give end-users in the universities enough time to have a better feeling of what the services offer.

Relevance moderated by awareness has significant and positive effects on intentions to use e-library services. This finding is supported by studies of technology acceptance carried out in African Cultures [2, 7, 24 & 38]. However, it should be noted that the relevance construct alone has a negative coefficient. End-users do not perceive the services as being relevant to their work. This may be explained by the fact that the systems in place are not supportive in terms of sensitization and promotion of the services. The implication of this finding is that end-users do not perceive e-library services to be relevant to their work since the services have not been marketed and promoted enough. End-users feel that if the services were valuable, such services would have been given enough publicity. This is particularly true because when relevance construct is moderated by awareness, there is a significant relationship at $p<0.01$ as per the regression results. An implication for future researchers is that relevance construct at the early stages of introducing IT services cannot work in isolation; it has to work with awareness and other moderator factors.

Based on the predictive powers of the dependent constructs of SOUTAUT model, end-users use of e-library services are mainly concerned with benefits they expect to derive from the services. The implication for this finding is that librarians need to be quite effective and efficient in the provision of the services so that end-users do not get disappointed. Library automation needs to be given highest priority. It was found that the most prominent factor that contributes to non-acceptance and use of e-library services is lack of awareness among the end-users. This is an indication that the services are not well advertised. There is a great need for librarians to develop a proactive efficient and effective promotional and marketing mechanism of the services, to make them more relevant to the end-users. Users need the competencies to make good use of e-library services, there should be continuous training programmes for end-users in information searching skills. Studies of age, gender, and discipline differences in the adoption of e-libraries are worthy investigations. Results from such studies will help in priotizing end-user training programmes.

The implications outlined here may change depending on the outcome of the full-scale study currently in the early stages of data analysis. Nevertheless, the findings of this study contribute to a better theoretical understanding of factors that affect acceptance and usage of e-library services especially in Developing Countries. The research will serve as a basis for other studies.

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