

Utilization of Electronic Library Resources in South African Universities of Technology

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Abstract: The major objective of this study was to conceptualize a framework that will assist in successful electronic resources utilization. This was encouraged by the fact that the determinants of effective utilization of electronic resources are still not clearly expressed. This study utilized the self-efficacy and Information systems success model (ISSM) theories to guide the process of collecting data. Data was collected from different campuses of Tshwane University of Technology around Gauteng. The results of this study indicated that factors like Computer Anxiety, Personal Innovativeness in IT, Outcome Expectations, E-Resource Prior Usage, Perceived effort, E-Resource System Quality, E-Resource Information Quality and lastly Facilitation and Service Quality were found to be significant to affect e-resource usage. The framework can be applied in the enhancement of e-resource utilization for learners. The designed framework can be used by other researchers as a reference to extend studies related to technology usage and utilization in other domains. The framework developed will assist the institutional administrators to better understand how learners utilize electronic resources. The insights gained will then assist the institution management in making informed decisions of improving the quality of e-resources so as to provide better services to the learners.

Keywords: Electronic Resources, Computer Anxiety, Personal Innovativeness in IT, Outcome Expectations, E-Resource Prior Usage, Perceived effort, E-Resource System Quality, E-Resource Information Quality, Facilitation and Service Quality.

1. Introduction

The advancement and the rapid changes of technology introduce several ways that can be opted for by learners. The learners can do this by sourcing information that is relevant to their studies. Most of the universities of technology have adopted technological innovation in their settings. They have also implemented technology driven learning environments to enhance teaching and learning. The introduction and easy accessibility of the internet by the learners has drastically increased teaching and learning. Also the availability of various technologies such as; 3rd generation of mobile telecommunications technology (3G), Wireless fidelity (WIFI), Asymmetric digital subscriber line (ADSL) and Long term evolution (LTE) have improved internet accessibility to the learners.

Learners prefer to access information faster and simpler as it is convenient and time saving. Utilizing electronic library resources helps learners to acquire information anytime and anywhere. Electronic library resources may be referred to as electronic materials in an e-library system (Wei, 2011). These electronic resources (e-resources) includes but not limited to; journals, databases, books, dictionaries, encyclopaedias, theses and dissertations and newspapers. Each day, these resources grow and can be accessed by learners outside and within their institutional libraries.

Arif and Kanwal (2009) noted that, libraries play an important role in attaining the goals of higher institutions of learning. They further put it that electronic library systems (e-library) are vital for learning as they act as a portal for e-resources. Because of their importance for e-resources, e-libraries are referred to as Information mining centres, information warehouses and information databanks.

The rapid increase in teaching and learning technology and the need to meet global standards have seen higher institutions of learning investing in information technology (IT) (Wei, 2011). In this regard, these institutions have gone ahead to ensure that their e-library system are equipped with up to date e-resources. The intention of this is to ensure that learners get relevant and helpful information that could support their studies. As a result, there is an emphasis placed on the importance of e-resources and their relevance to learners' performance. According to researchers Arif and Kanwal, (2009) and Wei, (2011), e-resources provide and facilitate learners with accessibility of different academic materials in their respective domains. With the increasing decline of internet costs and the ubiquitous technology, institutions of higher learning have benefited a lot from implementing digital library systems. It would also imply that the accessibility of e-resources become less costly to the learners within and outside their institutions hence improving their performance and throughput.

However, for e-resources' benefits to be realized, learners have to fully utilize them. Full utilization of these resources will enable institutions to achieve their objectives of improving the learners' performance. As also noted by researchers (i.e. Tyagi, 2011; Bhukuvhani et al., 2012), the utilization of these resources by learners is still limited.

Related literature was reviewed to establish the determinants that influence the utilization of e-resources within South African Universities of Technology. The identified factors for utilization of e-resources were used to develop a framework that could act as a basis in improving and enhancing e-resources utilization. The study was informed by data collected

from four campuses of the Tshwane University of Technology (TUT). The collected data was analysed quantitatively by using the statistical package for social scientists (SPSS).

2. Literature Review

2.1 E-resources

E-resources have become very important in acquiring information needed for learning. Deng, (2010) and Ozoemelem, (2009) emphasized the importance of utilizing e-resources in higher education. They further put it that, the use of e-resources by learners of higher institutions of learning is increasingly becoming mandatory. This is because e-resources facilitate learning and help learners to acquire knowledge that might have not been obtained in class. Hence, knowing how best e-resources could be utilized is imperative to institutions of higher learning.

2.2 Related work on E-resources

Zhang et al. (2011) conducted a study with a purpose of determining the behaviour of National Science and Technology library e-resource users in central china. The study suggested that libraries should improve their service quality to assist learners who searches different literatures. Furthermore they encouraged continued investigation of the scope of services that matches the learners' needs. However, their study didn't investigate why learners do not fully utilize e-resources and the determinant so e-resources utilization. The current study therefore sought to establish determinants that influence learners' utilization of e-resources.

Wu and Chen (2012) undertook a study on how graduate students perceive, use and manage e-resources. The study found that graduate learners are frequent users of e-resources when they write their thesis. The study also revealed that science and technology learners perceive e-resources as more important when compared to other learners. The researchers adopted a qualitative approach and interviewed 18 learners from three different study disciplines. They however recommended the use of a quantitative approach to include several participants as learners may have different technological backgrounds that could influence e-resource utilization. This study followed a quantitative approach to sample participants from different academic programs and levels of study to allow generalization of results.

3. The Research Model

Information Systems Success Model (ISSM) (Delone & McLean, 1992; 2003) and Self efficacy theory Compeau and Higgins (1995) were used to design the conceptual framework for this study. Constructs which were deemed relevant to be part of the conceptual framework were included and those that were not relevant to this study were excluded. Constructs that are not part of the conceptual framework were excluded because they were not going to aid in achieving the goal of this study. The constructs that formed the conceptual framework were:

- a) Computer Anxiety (CA)
- b) Personal Innovativeness in IT (PI)
- c) Outcome Expectations (OE)
- d) E-Resource Prior Usage (EPU)
- e) Perceived effort (PE)

- f) E-Resource System Quality (ESQ)
- g) E-Resource Information Quality (EIQ)
- h) Facilitation and Service Quality (FSQ)
- i) Learner satisfaction (LS)

Figure 1 demonstrates the conceptual framework of the study.

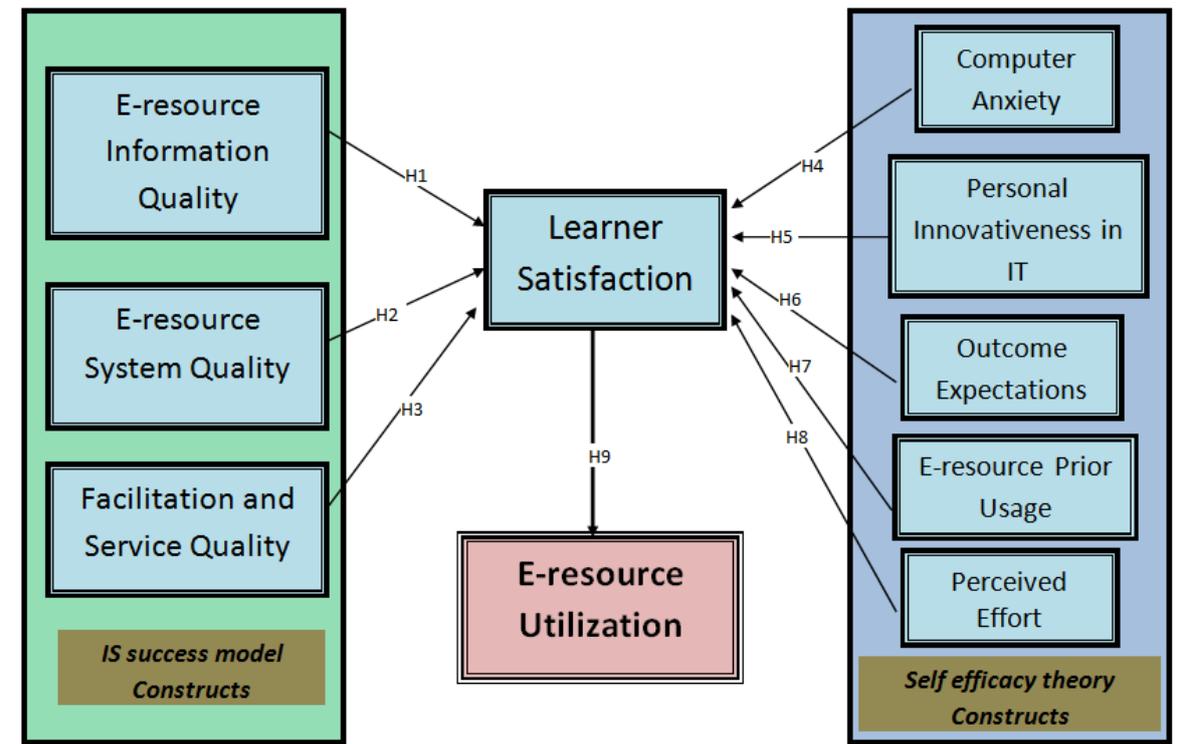


Figure 1: The Conceptual Framework

4. Objectives

The following are the objectives that governed the flow of the study:

- To establish the factors that influences learners' utilization of e-resources
- To investigate and explain the role of e-resources as a mitigating factor for improving learners' performance
- To use the established factors in the designing of a framework for e-resources utilization

5. Methodology

Since data was to be collected from these many learners from different campuses, close-ended questionnaire was sought to be more appropriate than other methods of data collection. The close ended questionnaires were developed based on the ISSM and self-efficacy frameworks. The questionnaire was designed basing on 5 point Likert- scale where 1 represented strongly disagree, disagree (2), neutral (3), agree (4) and strongly agree (5). A total of five hundred (500) questionnaires were distributed and four hundred (401) questionnaires were returned giving a response rate of 80.2%. Some of the questionnaires that were returned were not completed and were not usable which resulted in them not being

analysed. A total of 201 valid usable set of data collected was considered sufficient in producing dependable results. Statistical package for social science (SPSS) was utilized to capture the data as well as checking the validity and reliability of the data captured. The questionnaire and its constructs were tested for reliability by using the Cronbach's alpha (α). The overall reliability of the measuring instrument was 0.918 which is greater than the recommend 0.70 (Pallant, 2010). Most constructs except for CA, FSQ and OEU had reliability above the recommended value. However even though the CA, FSQ and OEU constructs were less than the recommended Cronbach's alpha (α) their values of 0.661, 0.622 and 0.680 are close to the recommended 0.700. The three constructs were qualified to be incorporated for further analysis.

6. Results

6.1 - Correlation

According to Olivier (2006), correlation is seen as the measuring instrument to measure the amount to which the independent variables relates to the depended variable. CA construct correlates to two constructs, that is, PE and OEU, no positive correlation was identified between CA construct and the other eight constructs, that is, PI, OE, EPU, ESQ, EIQ, FSQ and LS. The Pearson correlation between CA and PE constructs is -0.236 . The correlation significance levels among these two constructs were at the 0.001 level (2-tailed), this implies that $p < 0.01$. The Pearson correlation between CA and OEU is 0.163. The correlation significance levels among these two constructs were at 0.021 level (1-tailed), this implies that $p > 0.01$ and $p < 0.05$. A positive correlation was illustrated between PI, OE, EPU, ESQ, EIQ, FSQ, and LS. The Pearson correlations between these constructs were ranging between 0.251 (PI) and the highest being 0.624 (EIQ). All the constructs correlation significance levels were at the 0.000 level (2-tailed), this implies that $p < 0.01$ for all models constructs among each other. Furthermore, a positive correlation was noted between the LS construct and the OEU.

6.2 - Regression

According to Thompson et al. (1996) regression analysis is seen as a method where dependent variables relationships can be measured against one or more independent variables.

Table 1. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.801 ^a	.642	.621	0.568	.642	8.124	6	173	.000

a. Predictors: (Constant), LS, CA, PI, EPU, FSQ, OE, EIQ, ESQ, PE

Table 1 indicates that the model overall variance explained by the nine entered predictors was between 64 % and 62 % as represented by both R^2 (0.642) and adjusted R^2 (0.621) respectively. The results implies that all constructs (independent variables) entered within the model were sufficient in explaining the inclusion of these constructs in the conceptual

framework for e-resource utilization. In analysing table 1 it is noted that the F-test is also statistically significant at (0.000) which means that the constructs (independent variables) are also statistically significant to the dependent variable (OEU)

Table II. Regression Analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.031	.239		4.314	.000
CA	.070	.033	.141	2.097	.037
PI	-.023	.066	-.026	-.353	.724
OE	.031	.054	.050	.579	.563
EPU	.339	.166	.132	2.040	.039
PE	-.302	.152	-.098	-1.987	.046
ESQ	.105	.036	.262	2.945	.004
EIQ	-.290	.123	-.184	-2.361	.023
FSQ	.298	.114	.241	2.616	.019
LS	.153	.050	.268	3.050	.003

a. Dependent Variable: OEU

6.3 - Hypotheses

These hypotheses indicate the importance and power of each construct to e-resource utilization. All hypotheses suggested by this study were tested and the tested results are illustrated in table 4.7

Table III. Hypotheses Testing

Hypothesis	Relationship tested	Significance P- value	Action
H1	<i>E-resource information quality (EIQ) when mediated by learners' satisfaction influences e-resource utilization</i>	.023 < 0.05	Accepted
H2	<i>E-resource system quality (ESQ) when mediated by learners' satisfaction will influence e-resources utilization</i>	.004 < 0.05	Accepted
H3	<i>Facilitation and service quality (FSQ) when mediated by learners' satisfaction influences e-resource utilization</i>	019 < 0.05	Accepted
H4	<i>Computer anxiety (CA) when mediated by learners' satisfaction influences e-resource utilization</i>	.037 < 0.05	Accepted
H5	<i>Personal innovativeness in IT (PI) when mediated by learners' satisfaction influences e-resource utilization</i>	.724 > 0.05	Rejected
H6	<i>Outcome expectations (OE) when mediated by learners' satisfaction influences e-resource utilization.</i>	.563 > 0.05	Rejected
H7	<i>E-resource prior usage (EPU) when mediated by learners' satisfaction influences e-resource utilization</i>	.039 < 0.05	Accepted
H8	<i>Perceived effort (PE) when mediated by learners' satisfaction influences e-resource utilization</i>	.046 < 0.05	Accepted
H9	<i>Learner satisfaction (LS) influences e-resource utilization</i>	.003 < 0.05	Accepted

7 Business Benefits

The framework developed will assist the institutional administrators to better understand how learners utilize e-resources. This will assist them to devise better means of using e-resource to improve learners' performance. The designed framework can be utilized by other academic institutions of learning to heighten the use of e-resources. The insights gained will then assist them in making informed decisions of improving the quality of e-resources so as to provide better services to the learners hence achieving a competitive advantage

8 Conclusions

The results of this study indicated that learners get good assistance with their studies when utilizing e-resources. In particular, E-resources can assist learners with access to more learning materials which leads to learners being better prepare for exams. Furthermore when learners are well informed in their subject areas they will be well equipped to perform better in their learning programs. The more access the learner has to information that will better their understanding of what they are learning the chances of them improving on their studies will be high.

8.3 Limitations

There are some limitations of this study. Not all campuses of Tshwane University of technology were covered where views of other campuses were not attained. This might have limited learners' participation from other campuses which the researcher did not visit. Only one university of technology was utilized for data collection whereas more institutions could have been and a comparative analysis with other universities would have been possible.

8.4 Recommendations

Since the research was only conducted in Tshwane University of Technology's four campuses, future research can be conducted with focus on colleges, traditional universities, and further education and training institutions. This study proposed factors affecting e-resource usage by learners such as Computer Anxiety, E-Resource Prior Usage, Perceived effort, E-Resource System Quality, E-Resource Information Quality Facilitation and Service Quality. However other important factors need to be counted in order to have a better understanding of e-resource utilization. Management should increase effective awareness programs to make learners aware of e-resources that can help them with their studies. Future research can be conducted with different research frameworks in determining these factors as this will yield different results

8.5 Conclusion

The main purpose of this study was to develop a framework for e-resource utilization within Universities of Technology. For this framework to be developed it was deemed important to first establish the factors that influenced learners to utilize e-resource in South African Universities of Technology. The study identified factors which may influence learners' effective utilization of e-resources. Only two factors which were Personal Innovativeness in IT and Outcome Expectations were found not to be significant in influencing effective utilization of e-resources. According to the results computer anxiety, e-resource prior usage, perceived effort, e-resource system quality, e-resource Information quality, facilitation and service quality factors were found to be important factors. The study also revealed that most learners have access to internet and have adequate computer skills to enable them to utilize e-resources. These skills will give them the leverage to make use of e-resources that are offered to them by the institution.

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