OPEN EDUCATIONAL RESOURCES (OERS) DEVELOPMENT IN NIGERIA: PREDICTING TASK TECHNOLOGY FIT (TTF) IMPACT ON FACULTY USAGE, SATISFACTION AND PERFORMANCE

Osang, Francis Bukie (PhD)

Computer Science Department
National Open University of Nigeria
Abuja, Nigeria
Email: bukie3osang@yahoo.com

Abstract

Open educational resources (OER) are gaining grounds globally. However, different regions face different obstacles to OER adoption, policies and experiences. Unfortunately, Africa has continued to trail behind the rest of the world in the adoption of OERs. A number of factors have been adduced from literature ranging from lack of awareness; absence of policies, infrastructural deficits among others with total absence of literature on the fit of the existing technologies being used and how these technologies fit affects utilization, satisfaction and performance impacts. This work adopted the TUSPEM model as a theoretical framework to assess the causal relationship among five constructs of Task Technology Fit, social norms, utilization, satisfaction and performance impacts. Through a quantitative research approach, snowballing sampling was adopted to identify 123 respondents from a Nigerian University. Smart PLS was used to analyse the dataset. Although the results had strong support for relationships between TTF, satisfaction, the result showed a stronger relationship from post usage satisfaction to performance than TTF to performance. It implies that in a voluntary usage environment, TTF and user satisfaction is critical if performance using any information system is to be achieved.

Keywords: *Task Technology fit, OER, user satisfaction, utilization, performance, information system etc.*

Introduction

The public outcry on the falling standard of education especially in Africa is alarming. While huge chunks of budget projections are directed towards improving the standard of education, little effort is made geared towards improving access to quality content. As reported by (Ngugi, 2011; Nyandara, 2012), educational institutions rely on printed resources which are usually (a) expensive (b) old and out-dated text books/course materials (c) non-interactive or lack of multimedia quality (d) almost impossible to share with wider group of readers etc.

Developed countries of the world are today faced with serious social challenges of coping with the influx of migrants from poorer countries who may be searching for greener pastures including access to sound education for their children. The shot fall in the number and quality of content especially in developing countries poses a big threat to the quality of education offered by educational institutions Jimes et al (2013). Today, the concept of open educational resources addresses most of these challenges. OER are considered as freely and openly available digitized learning resources that can be adapted, modified, and re-used for teaching, learning, and research (OECD, 2007). The idea of Open Educational Resources (OER) was muted in a forum on the impact of open courseware for higher education in developing countries in 2002 hosted by UNESCO in Paris, France by United Nations Educational, Scientific and Cultural Organization (UNESCO) in a Forum (UNESCO, 2002). OER has been defined as teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and repurposing by others OER Africa (2017).

Past research show that OER increases access to quality materials and heavy reduction in the cost of purchasing materials Hilton III et al. (2014). In a study that focused on tertiary education in the US, Allen & Student PIRGs (2010) analyzed the cost of OER by focusing on ten US college courses which were available in that subject area. It was concluded that on the average, 80% annual savings of the cost of material was achieved using OER.

With a total of 1.4 billion resources at the end of 2017, the growth of OERs tracked by the number of creative commons licenses is unprecedented. In 2015, Africa continent trailed behind the rest of the world with only 2% contribution OER Africa (2017). Fortunately, efforts by the OER movement and other initiatives targeted at sensitizing African institutions is yielding fruits as Africa overtook the Arab world with 7% as against 6% creative commons (2019).

In order to further entrenched OER, a number of searching techniques (web tools) and evaluation tools have been designed to find and evaluate OERs namely CC Search, OER Commons, OER Africa, Google Power Searching OER Africa (2017). Additionally, on successful identification of appropriate OERs, some tools exist (hosted at OER Commons, OER Quality Evaluation, UKOER Synthesis and Evaluation etc.) in the determination of fit for purpose and an evaluation system comprising rubrics aimed at addressing issues of quality of open learning resources.

OERs are being put to use through (a) developing an online platform that supports faculty to create, locate and customize curriculum in open content. (b) The creation of African Storybook Initiative where children stories are translated into different African languages as well as (c) the creation of free and adaptable textbooks OER Africa (2017).

In a survey by Hoosen (2012) for Common Wealth of Learning (COL) and UNESCO on OER across continents of the world, African countries except South Africa reported that lack of awareness of OER, lack of skills for the development OERs, lack of infrastructural facilities, lack of funds to undertake the production of OER, digital illiteracy, absence of OER policy etc.

Consideration of the fit perspective remain critical as research has shown that not less than 80 percent of tools developed for organizational usage ought to fit the organizational operations while 20 percent of the application can be customized if the standard rule of thumb for customization is anything to go by (Strong and Volkoff, 2010, Foster 2001). However, there has been little or no known research that has focused on understanding the fit phenomenon in

predicting faculty's performance impacts on OERs despite it theoretical and practical needs.

Hence, this study addresses the research question: how fit are these tools and how does fit predict faculty's usage and performance impacts of OERs? Since theory serves as a guide for data collection and analysis (Walsham, 2006), part of the technology utilization, satisfaction and performance (TUSPEM) model was adopted as the theoretical framework in order to understand fit that predicts usage, satisfaction and performance.

The Technology Utilization, Satisfaction and Performance Model (TUSPEM)

The widespread adoption of software applications has necessitated the urgency for a deeper understanding of fit, usage, performance and other dependent variables. Since the advent of information and communication technologies, there have been several theories aimed at formulating principles guiding its operations.

While several theories focuses on pre-adoption studies Davis et al (1989), others concentrate on satisfaction-based studies DeLone and McLean (2002) with the aim of exploring satisfaction derived from usage of ICTs. Several others concentrate on performance based evaluations with a view to assessing/interpreting the impacts of ICTs on individual and organizational performance.

The TUSPEM model as a hybridization of the technology-to-performance model (Goodhue and Thompson, 1995) and other information systems models is hinged on a tripartite dimensions predicting performance impacts of technologies and information systems namely the task technology fit dimension, the utilization pre-cursors dimension as well as the satisfaction dimension. The fit dimension presupposes that for a technology to perform any given task satisfactorily, it must first and foremost suit that given task. As noted by Eden et al 2010, an evaluation of how well a specific technology is suited for the performance of a given task has motivational effects on the users. It agrees that task characteristics, technology characteristics and individual characteristics are major determinants of task technology fit which in turns affect performance. The satisfaction dimension views satisfaction from the post usage perspective. It proposes that users' satisfaction of an information system/technology is a product of usage. The utilization dimension focuses on the pre-cursors or determinants of information system utilization which includes users' attitude to using, computer self-efficacy, perceived usefulness and ease of use, social norms, habit and IT support.

TUSPEM combined constructs such as ease of use and perceived usefulness from technology acceptance model (TAM), satisfaction from DeLone and McLean (2002), usage, TTF, user habit, attitude and performance from Goodhue and Thompson (1995), and computer self-efficacy from Compeau and Higgins (1995), Eden et al (2010); Aguirre-Urreta, 2011).
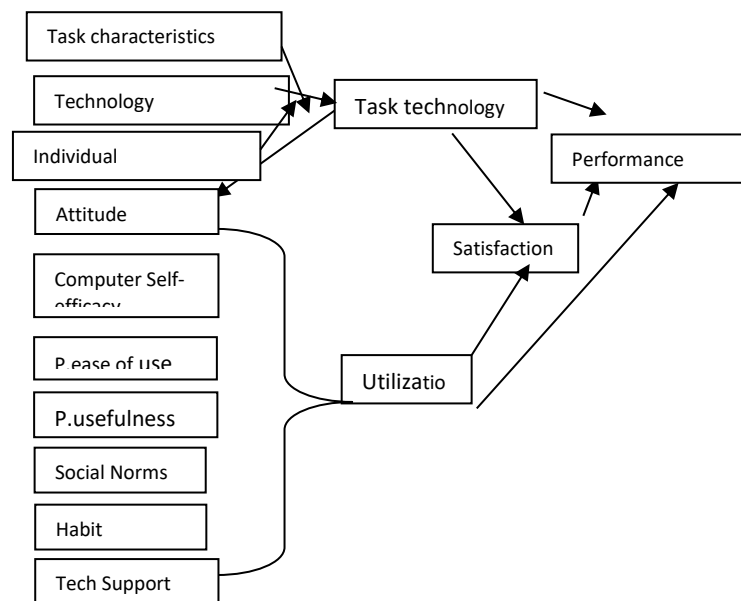
Figure 1: The Technology Utilization, Satisfaction and Performance Model (TUSPEM)
Source: author

The Research Model and Hypotheses

The Task-Technology Fit Construct

Prior to the advent of computers, several operations were driven through manual operations. Today, the advent of computer systems have resulted to the computerization of tasks required to drive processes both at individual and organizational levels. The capability for any specific technology to handle a given task requirement is what is regarded as task-technology fit. Fit changes with the technology Iversen & Eierman (2018). TTF is seen to be higher when the functionality of a technology and the user's requirements are similar. Additionally, TTF is lower if the functionality of the technology is less adequate in meeting the needs of the user. Individuals have a greater tendency to utilize technology if the capabilities of the technology fit the needs of the individual.

In their study Dishaw et al (2013) found that Word/email and Google Docs were perceived to have a better Task-Technology Fit than Twiki or Office Live with no perceived difference in fit between Word/email and Google Docs or between Twiki and Office Live.

Building upon the work of Dishaw et al (2013), Iversen & Eierman (2018) conducted an investigation on collaborative writing and editing tools and the factors that impact on TTF and technology acceptances using 162 students from College of Business at a Midwestern US university. Students in three semesters were subjected to the same tool (MS Word/email, Google Docs, and Office Live/Office 365). The study speculated that students are eager to interact with new tools than with older tools. They perceive that the old technology no longer fits the task as well and thus it performs lower on outcome measures. It was also observed that even though the Word/email technology did not change during the time of the study, its scores went down, possibly due to users' experience with newer technologies more suited to the task.

Task characteristics, technology characteristics and individual characteristics have been identified to be determinants of TTF (Goodhue and Thompson 1985, Dishaw et al 1999). However, findings have confirmed that users' evaluation of TTF on performance can be sufficiently determined on performance without necessarily assessing its determinants McGill et al (2008).

The casual relationship between TTF and performance has been investigated in IS literature with mixed findings. TTF has been reported to having a positive and motivational impact on job performances Eden et al (2010). Parameswaran & Kishore (2017) opined that reduced task effort improves task performance through flow cognitive elaboration as a moderating factor. Staples and Seddon (2004) also reported strong support for the influence of TTF on the performance impact using library management systems. On the contrary, Luarn (2009) found moderate support for the linkage that TTF will positively affect the performance of employees to collaborate. Thus the hypothesis is stated thus:

H_1: TTF has a positive relationship on faculty's performance using OER tools

H_2: TTF has a positive relationship with satisfaction

H_3: TTF has a positive relationship with utilization

Social Norms

One key precursor of utilization according to the TPC model (Goodhue & Thompson, 1995) is social norm. In organizational settings, it is incumbent on the employer to provide the tools needed by the employee to carry out assigned tasks. Depending on existing organizational policies/interest, users are expected to produce expected outcomes using available tools. Results from literature shows mixed findings.

In the corporate context, educational institutions for example, results from literature shows mixed findings on the relationship social norms and LMS utilization (Venkatesh & Davis, 2000) found that in a mandatory usage environment and when experience is at its early stages, social

norms directly impacted on users' intention to use an application. In the eLearning domain, McGill et al (2011) found that social norms affected usage only when the lecturers feel that students expect them to use LMS. Van Raaij & Schepers (2008) on the other opined that social norms relates with users intention indirectly through perceived usefulness. Thus, the hypothesis is stated thus:

H_4: Social norms have a positive relationship with lecturers' utilization of OER tools.

System Utilization

There has been a plethora of intention to use based research in the IS field without much recourse to investigating actual usage and how this construct result to users satisfaction and eventual performance. While Davis et al (1989) and other TAM-based researchers identified perceived ease of use and perceived usefulness as external variables resulting to intention to use and actual usage predictions, the TUSPEM model considers precursors of utilization to include computer self-efficacy, social norms, affect towards use, users habit, perceived usefulness, perceived ease of use and ICT support. However, since this research is not interested in the entire precursors of utilization as modelled by both TPC and TUSPEM models, we model the precursors using a critical precursor social norm (McGill et al 2011; Staples & Seddon, 2004) to ensure that utilization is sufficiently well explained in a mandatory usage context to test the relationship between utilization and OER performance impacts.

Being a key component of several models, findings from researches in the field have been characterized by mixed findings depending on the tools, system and context. On lecturers' use of learning management system (LMS), McGill et al (2011) found a significant relationship between lecturers LMS utilization and performance impacts.

Contrarily, while testing the TPC model among university librarians and students users of productivity software, Staples and Seddon (2004) results did not support the relationship between users' level of utilization and performance. Thus, the hypothesis:

H_5: Utilization has a positive relationship with performance

H_6: Utilization has a positive relationship with user satisfaction

User Satisfaction

This model views satisfaction as a post usage experience as it affects performance. It postulate that increased satisfaction with an information system results to increased individual and organizational performance.

In investigating users experience and satisfaction with enterprise resource planning systems (ERP) using qualitative content analysis method, Liere-Netheler et al (2017) found that aspects of task and the type of technology used affects job satisfaction. The causal relationship between task characteristics and job satisfaction was used by Morris & Venkatesh (2010) with the job characteristics model JCM as the theoretical foundation during an ERP system implementation. Questionnaires were used before and after the implementation, to further determine the validity of the influence, it was confirmed that all the five job characteristics had an influence on job satisfaction. Conversely, while Pim Baas (2010) found employee satisfaction as not being consistently found to be related with task-technology fit, Luarn (2009) found moderate support between TTF and utilization directly. Hence, the hypotheses are stated thus:

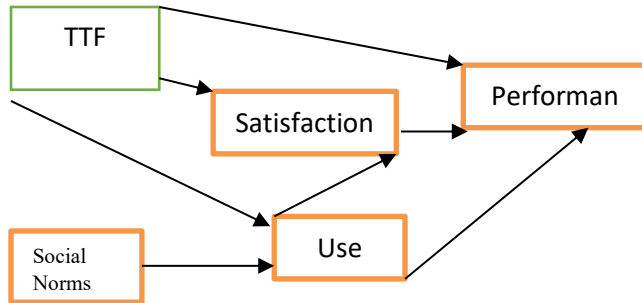H_7: User satisfaction has a positive relationship with performance

Figure 2: The Research Model

Methodology

Design
The study adopted an offline survey with a view to empirically validating the theoretical model. Based on the theoretical framework, structured test items are adapted bearing in mind that the research model has two exogenous constructs (TTF and social norms) and three endogenous construct (use, satisfaction and performance).
The methodology used is the structural equation modelling. Structural equation modelling is a second generation multivariate technique used to analyse or test theoretical relationships among the variables in a model.

Sampling
In order to ensure that the views collected through the survey is representative of the Lecturers familiar with OERs operations, snowballing method was used. This approach is suitable in identified respondents through referrals.

Of the 150 selected across the schools for the study, 123 respondents participated actively in the study by returning the questionnaires. In calculating the minimum sample size required using PLS, the endogenous construct with the most paths leading to it was considered.
In calculating the minimum sample size required using PLS, the endogenous construct with the most paths leading to it was considered (Performance with three precursors leading into it). According to Chin (1998), the minimum sample size must be 10 times the number of paths leading to the construct with the most endogenous variables. Hence, the sample size in this study is considered adequate for the PLS analysis.

Development of the Instrument
The first section of the instrumentation used four ordinal scales for the collection of basic demographic information namely age (between 30 -70), gender (male or female), education (Bachelors, Masters and Doctorate), and years of experience with OERs (1-10 years).
The second section of the instrument adopted the direct measurement of the variables under study. To guarantee content validity, the items used were adapted from existing validated scales from previous related studies. The twenty-nine test items were modified to suit the context. All the items were modelled with reflective indicators and measured on a 7 point Likert scale with the end points being "strongly disagree" and "strongly agree".
The diagram below shows the coding used and the number of test items used in the measurement of each of the constructs used in the study.

Social Norms	SN	SN1…..SN4
Performance Outcome	PERF	PERF1…PERF7
Satisfaction	SAT	SAT1….SAT5
Task Technology Fit	TTF	TTF1….TTF8
Utilization	USE	USE1….USE5

Table 1: Showing Construct Codes

Validity and Reliability

The work considered both the outer model and inner models for analysis. The measurement model represents the relationship between the indicators and the LVs. The outer model assessed the model in terms of: Uni-dimensionality, internal consistency reliability, indicator reliability, convergent validity and discriminant validity as discussed under measures above since our model is a reflective model.

Survey Protocol

The survey was conducted in a Nigerian University. Members of the faculty who participated in OER workshop on course material development using OER tools organized by OER Africa in collaboration with the National Open University of Nigeria (NOUN) took part in the survey at the end of the workshop. In addition, faculty members familiar with OER whose courses were selected for 'OERization' also participated in the survey.

Completion of the questionnaire was voluntary and all responses anonymous. The questionnaire and completion process were pilot tested by some members of staff of the OER unit in NOUN and slight changes were made in order to further simplify some items.

Collection of data

A one-week period was given to the faculty to enable them enough time to respond to the instrument. The data was collected by the researcher and recorded in excel (csv) format. Discrepant cases in the spreadsheet were assigned -1 for computation. Storage of the data was done in both internal and external disk drives to avoid any lost of data after collection.

Results

A total of 123 Lecturers (Male (71), Female (52)) from the rank of Assistant Lecturer to Full Professor participated in the survey with ages ranging from 30 to 70 years. The participants had varying years of experience in OERs.

4.1 The Measurement Model

Assessment of the outer model comprised of uni-dimensionality, internal consistency reliability, convergent validity and discriminant validity.

4.1.1 Uni-dimensionality: Out of the 29 items used, twenty two loaded significantly on the latent variables. Three items from social norms (SN1, SN3 and SN4) and four items from utilization (USE1, 3, 4 and 5) failed to meet the threshold as recommended by Gefen and Straub (2005) and were consequently eliminated for purification purposes. Hence there was high evidence of uni-dimensionality with the other constructs indicator loadings used in the model as all items loaded above the upper threshold.
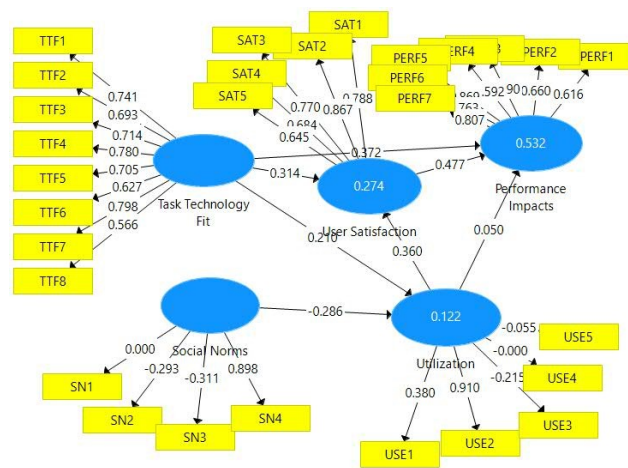

Figure 3: Showing indicators validity and reliability measures

4.1.2 Composite reliability (CR): For determination of the extent to which measured items within the same construct were related to each other, composite reliability measurement criteria were used in this study to assess internal consistency reliability. All constructs in the model exceeded the minimum threshold of 0.6 (Nunally and Berstein, 1994) and 0.70 (Hair et al, 2006) except utilization that had 0.51 as shown in table 2 below. Hence, there was also sufficient evidence of internal consistency reliability among the items of the variables in the model.

4.1.3 Convergent reliability was assessed using average variance extracted (AVE). All constructs met the threshold of AVE greater than 0.50 (Hair et al. 2006) social norms and utilization as shown in table 2 below.

4.1.4 Discriminant Validity: From the squared AVE values shown in the table below, there was evidence of discriminant validity. Each of the constructs shared more variance with its assigned indicators than with any other variables within the column under it. As a test for discriminant validity, the diagonal elements must be higher than any other corresponding row or column entry Barclay et al (1995). Consequently, all items loaded highest on their targeted constructs as showed in table 2 below:

Construct	CR	No of items	AVE	Rho-A	1	2	3	4	5
Perf	0.89	8	0.54	0.86	0.74				
Social Norm	0.03	4	0.23	0.23	-0.01	0.50			
TTF	0.89	7	0.50	0.88	0.57	0.01	0.71		
Satisfaction	0.86	5	0.57	0.86	0.64	0.15	0.39	0.76	
Utilization	0.21	5	0.20	0.21	0.33	0.23	0.20	0.42	0.45

Table 2: Showing outer model

The Structural Model

Ability of the model to explain the variance in the dependent model and the statistical significance of the estimated model coefficient are the assessors of the inner model.

The Predictive Ability of the Model

The predictive power of the model for the dataset is represented by the R^2 value on the endogenous variables as shown in figure …below which indicates that 53% of performance impact, 27% of user satisfaction and 12% of utilization were predicted by the factors contained in this model.
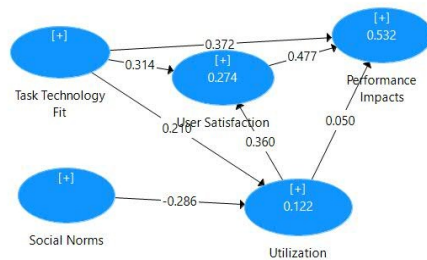

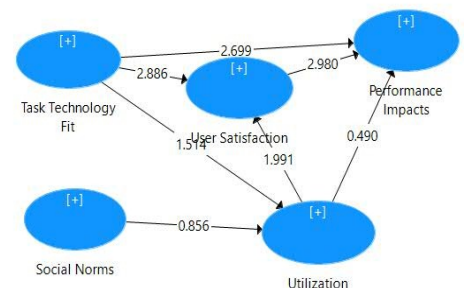Figure 4: Showing the Structural equation modelling (SEM)

Figure 5: Bootstrapped result

The detailed R square values derived from the SEM calculation are showed in table 3 below:

Construct	R Square Value
Performance Impact	0.532
User Satisfaction	0.274
Task Technology Fit	-
Utilization	0.22

Table 3: R square Values

The statistical significance of the estimated model coefficients/ Hypotheses Testing

The second aspect of the inner model examines the path coefficients of the latent variables used in the model. The table 4 below shows the path coefficient, t-values and r-values.

Hypothesis	Paths	Path Coefficients	t-value	R-values	Support for H_1 ?
H_1	TTF to performance	0.37	2.63	0.01	Yes
H_2	TTF to Satisfaction	0.31	2.78	0.00	Yes
H_3	TTF to Utilization	0.21	1.52	0.13	No
H_4	Social Norm to Utilization	0.29	0.85	0.40	No
H_5	Utilization to Performance	0.05	0.50	0.62	No
H_6	Utilization to Satisfaction	0.36	2.01	0.00	Yes
H_7	User Satisfaction to Performance	0.48	2.93	0.00	Yes

Table 4: Path Coefficients

Discussion on Findings

With a 53% predictive power of the research model used, it is implied that the model is suitable for research especially in the eLearning domain. From the figure 3 above, 53% of performance impacts is explained by TTF, utilization and satisfaction, 27% of Lecturers satisfaction is explained by TTF and utilization, and 12% of utilization is explained by TTF and social norms constructs. It also implies that the model predicts 53% of the dependent variable (performance). By implication, 47%, 73% and 88% of performance, satisfaction and utilization respectively would be explained by other variables not included in this researched model.

While TTF contributed about 37% in determining performance impacts, the relationship in this study was found to be positive with a t-value of 2.63 at a 0.01 significance level and was supported. This finding is consistent with the work of Parameswaran & Kishore (2017) which opined that reduced task effort improves task performance through flow cognitive elaboration as a moderating factor. TTF has earlier been reported to having a positive and motivational impact on job performances Eden et al (2010). Staples and Seddon (2004) also reported strong support for the influence of TTF on the performance impact using library management systems. By implication, members of the faculty's performance would be increased with an increase in the fit of OER tools available for discharging their functions.

The hypothesized relationship between TTF and user satisfaction (H_2) was significant and was therefore supported with a t-value of 2.63 at 0.00 significance level. This finding agrees with Liere-Netheler et al (2017) that found that aspects of task and the type of technology used affects job satisfaction. Morris & Venkatesh (2010) also supported the causal relationship between task characteristics and job satisfaction using the JCM model as the theoretical foundation during an ERP system implementation.

The relationship between TTF and utilization (H_3) as hypothesized was not supported at with a t-value of 1.52 at 0.13 level of significance. This finding is supported by earlier works of Staples and Seddon (2004) while testing the TPC model among university librarians and students' users of productivity software which did not support the relationship between users' level of utilization and performance.

The causal relationship between usage and performance was not supported. This finding agrees with Staples and Seddon (2004). While testing the TPC model, they did not find any relationship between level of utilization and performance. Equally, as contained in the McGill et al (2011) that pointed out that utilization may not be influenced by system quality and information quality (Liveri, 2005; Landrum et al 2008). It was also concluded that level of utilization may not influence performance (Wu and Wang, 2006; McGill et al 2003, 2009, 2011). In fact, according to Seddon (1997), the causal relationship between utilization and individual performance proposed by DeLone and McLean may not exist.

Equally, the hypothesized relationship between usage and satisfaction (H_6) vis-a-vis user satisfaction and performance (H_7) were supported with 2.01 and 2.93 t-values at 0.00 and 0.00 levels of significance respectively. This association was supported by the findings of Lee, Kim and Lee (1995). This work therefore supports the suggestion that satisfaction is a product of usage. By implication, increased in performance/production is achieved when users are satisfied using any system.

The causal relationship between social norms and utilization (H_4) was not supported. Scholars in the information system field have been involved in testing effects of social norms (presence) with different variables and context. Van Raaij & Schepers (2008) also supported that social norms relates with users intention indirectly through perceived usefulness. On the other hand, the relationship between social norms and performance expectancy has been tested in the e-commerce context (Ogonowski et al. 2014) and microblogging context (Yan and Huang 2014).

These findings also suggest that in order to have maximum performance from Lecturers, the technology must not only fit the e-assessment task, their satisfaction while using such system is equally crucial. It implies that educational institutions and organizations should aimed at providing adequate training of staff to enable them fully utilize and appreciate the functionalities and capabilities of the various technologies in their work places.

Conclusion

The result of this study is different from those obtained from the TPC model by Goodhue and Thompson (1995), Staples and Seddon (2004), McGill et al (2008, 2011). While their results found more explanatory power from the task technology fit than from the utilization angle, this research found more explanatory power from satisfaction 48% compared to the 37% obtained from the TTF construct in this study. In the optional usage context, post usage satisfaction is the most critical factor in determining performance.

The results showed that TTF had a direct impact on faculty's performance impacts using OER tools. This implies that the better the fit of the technology to the task and the better the effect on their task performance. Contrarily, poor TTF results to dissatisfaction with the system, frustrations and eventual abandonment of information systems. It implies that for organizations to adopt OERs, adequate training and retraining of faculty members must be carried out on existing tools with the view to determining fit, satisfaction and usage perceptions to avoid waste of financial and material resources.

It is believed that this research has contributed towards the establishment of the linkage between technology utilization, satisfaction and performance impact in a mandatory IS usage environment. Most of the studies along this dimension have focused on predicting performance only from the TTF and utilization angles. This study however has expanded the scope to include satisfaction as well, as a predictor of performance impact. It therefore means that for performance impacts of an IS to be determined especially in the e-learning domain, the technology must not only fit the task and be used, it should also satisfy the user for better performance.

Another important dimension is the post utilization study of the influence of IS usage on satisfaction. Usage influences satisfaction instead of the pre-usage approach of satisfaction stimulating usage in information systems studies.

Recommendations for Future Research

Considering the effect of social norms in mandatory and compulsory usage environment context, further research should explore it effect on usage using other test items as only one of the four test items used in this model was appropriate for the construct. Further work should formulate test items with higher unidimensional and internal consistency reliability criteria.

The relationship between the precursors of utilization such as affect towards use, social norms, users' habit, computer self-efficacy, perceived usefulness and ease of use and other related constructs should be explored to provide deeper understanding of utilization in different context using different technologies.

References

Allen, N., & Student PIRGs. (2010). A cover to cover solution: How open textbooks are the path to textbook affordability. Washington: Center for Public Interest Research. Retrieved from http://www.studentpirgs.org/sites/student/files/reports/A-Cover-To-Cover-Solution_4.pdf

Assefa S., & Prybutok V., Towards a comprehensive model to predict perceived performance impact of wireless/mobile computing in a mandatory environment. AMCIS 2006 Proceedings. Paper 324. http://aisel.aisnet.

Bagozzi, R. P. (2007). The Legacy of the Technology Acceptance Model and a Proposal for a Paradigm Shift" Journal of the Association for Information Systems (8:4), 2007, pp. 244-254.

Bandura, A. (1986). Social Foundations of Thought and Action: A Social Cognitive Theory. Prentice Hall. [4]

Benbasat, I., & Barki, H. (2007). Quo Vadis TAM? Journal of the Association for Information Systems, 8(4), 211-218. Available at http://aisel.aisnet.org/jais/vol8/iss4/12

Bhattacherjee, A., & Premkumar, G. (2004). Understanding changes in belief and attitude towards information technology usage: A theoretical model and longitudinal test. MIS Quarterly, 28(2), 229-254.

Burton-Jones, A. & Gallivan, M. J. (2007).Toward a Deeper Understanding of System Usage in Organizations: A Multilevel Perspective," MIS Quarterly (31:4), pp. 657-679.

Chin, W. (1998). "The Partial Least Squares
Approach to Structural Equation Modelling, in G.A. (Ed.)" Modern Methods for Business Research, London, , pp. 295-336.
Compeau, D. R. and Higgins, C. A.,

(1995)"Application of social cognitive theory to training for computer skills" Information Systems Research, 6(2):, 118-143.

D'Antoni, S. (2008) Open Educational Resources,The Way Forward. UNESCO/IIEP.
http://learn.creativecommons.org/wp-content/uploads/2008/03/oer-way-forward-final-version.pdf
Davis, F.D., Bagozzi, R.P. & Warshaw, P.R.(1989).

"User acceptance of computer technology: a comparison of two theoretical models", Management Science, 35(8), 982-1003.

DeLone, W. & McLean, E., (1992) "Information systems success: The quest for the dependent variable", Information Systems Research, 1, 60-95.
Dillman, D. A., (2007). "Internet and interactive voice response surveys, Mail and internet surveys: The tailored design method" (2nd ed., 352-353). Hoboken, NJ: Wiley.
Dishaw, M.T & Strong, D. M. (1999) "Extending the technology acceptance model with task-technology constructs", Information & Management 36, 9-21.

Dishaw, M., Strong, D., & Brent. D.B. (2004)
"The Impact of Task-Technology Fit in Technology Acceptance and Utilization Models". AMCIS Proceedings, Paper 416. org/amcis2006/324.

DongSheng, L., Hao, T., Bei, W. & Shimin, H.(2011) "Integrating TTF and TAM perspectives to explain mobile knowledge work adoption" Journal of convergence information technology, 6(4)

Eden, D., Ganzach, Y., Granat-Flomin, R., and Zigman, T. (2010). Augmenting Means Efficacy to Improve Performance: Two Field Experiments, Journal of Management, 36(3), 687-713.

Fishbein, M. & Ajzen, I.. (1975). "Belief, attitude, intention, and behaviour : An introduction to theory and research", Reading, Mass, Don Mills, Ontario: Addison-Wesley Pub. Co.Fornell, C. & Larcker, D. (1981). "Evaluating structural equation models with unobservable variables and measurement error" J. Market Res., 1981, 18: 39-50.

Gefen, D., and Straub, D. W. (2003). "Managing
User Trust in B2c E-Services," E-service Journal 2(2), 7-24.

Goodhue, D. & Thompson, R. (1995). "Task
technology fit and individual performance". MIS Quarterly, 19 (2), 1995, 213-236.
Gooru Platform (http://www.gooru.org/welcome/)

Hair, J., Black, W., Anderson, R. & Tatham, R., (2006) "Multivariate data analysis 6th ed."
Englewood Cliffs, NJ: Prentice Hall.

Hilton III, J., Robinson T. J., Wiley, D. A., &

Ackerman, J. (2014). Cost-savings achieved in two semesters through the adoption of Open
Educational Resources. International Review of Research on Distance and Open Learning, 15(2).
Retrieved from http://www.irrodl.org/index.php/irrodl/article/view/1700/2833

Hoosen, S. (2012). Survey on Governments' Open
Educational Resources (OER) Policies, prepared for the World OER Congress, Commonwealth of
Learning & UNESCO.
Irick, M.L. (2008) "Task-Technology Fit and

Information Systems Effectiveness, Journal of Knowledge Empirical Test", Information Systems
Research 17(3), 228-246.

Iversen, J.H. & Eierman, M.A. (2018). The Impact of
Experience and Technology Change on Task-Technology Fit of a Collaborative Technology.
Journal of Education and Learning; 7(3), 56-75.
Jimes, C; Weiss, S, & Keep, R. (2013). Addressing

the Local in Localization: A Case Study of Open Textbook Adoption By Three South African
Teachers. *Journal of Asynchronous Learning Networks*, 17(2).

Liere-Netheler, Kirsten; Vogelsang, Kristin; Hoppe,
Uwe; and Steinhüser, Melanie, "Towards the User: Extending the Job Characteristics Model to
Measure Job Satisfaction for ERP Based Workplaces – A Qualitative Approach" (2017).CONF-
IRM 2017 Proceedings. 37. http://aisel.aisnet.org/confirm2017/37
Limayem M., Hirt, S. & Cheung, C.(2007) "How
habit limits the predictive power of intention: the case of information systems continuance". MIS
Quarterly, 31(4), 705–37.
Luarn P. & Huang K., (2007) "Factors Influencing
Government Employee Performance via Information Systems Use: an Empirical Study" Electronic
Journal of e-Government Volume 7 Issue 3, p227-240.
McGill, T., Klobas, J. & Renzi, S., (2008) "The
Relationship between LMS Use and Teacher Performance: The Role of Task-Technology Fit".
ACIS Proceedings. P. 82. http://aisel.aisnet.org/acis2008/82.

Mtebe, J.S. & Raisamo, R. (2014). Challenges and
Instructors' Intention to Adopt and Use Open Educational Resources in Higher Education in
Tanzania, The international review of research in open and distance learning 15(1).

Ngugi, C. N. (2011). OER in Africa's higher
education institutions. Distance Education, 32(2), 277–287.
doi:10.1080/01587919.2011.584853

OER Africa, a Saide Initiative (2017). UnderstandingOER. Johannesburg: Saide

Ogonowski, A., Montandon, A., Botha, E., and Reyneke, M. (2014). "Should New Online Stores Invest in Social Presence Elements? The Effect of Social Presence on Initial Trust Formation," *Journal of Retailing and Consumer Services* (21:4), pp. 482-491.

Reyneke, M. 2014. "Should New Online Stores Invest in Social Presence Elements? The Effect of Social Presence on Initial Trust Formation," *Journal of Retailing and Consumer Services* (21:4), pp. 482-491.

Osang, F., Abinwi N. & Tsuma. C. (2015)
"Reviewing Information Systems Usage and Performance Models" International Journal of Computer Science and Information Technologies, (IJCSIT) 6 (1), 476-484.

Parameswaran, S. & Kishore (2017). A Social Presence Model of Task Performance: A Meta-Analytic Structural Equation Model. Twenty-third Americas Conference on Information Systems, Boston, 1-10.

Schrier, T. (2009). "The Utilization of a hybrid task technology fit-technology acceptance model for the evaluation of hotel Guest Empowerment Technologies usage", UNLV Theses/ Dissertations/ Professional Papers/Capstones. Paper 45.

Staples D. S. and Seddon, P., (2004) "Testing the Technology-to-Performance Chain Model" Journal of Organizational and End User Computing (16:4), pp 17-36.

Tai-Kuei, Y. and Tai, Y., (2010) "Modelling the factors that affect individuals' utilisation of online learning *Tsinghua Science and Technology* 19(5), 531-542.

UNESCO. (2002). UNESCO promotes new initiative for free educational resources on the Internet. Retrieved World OER Congress, Commonwealth of Learning & UNESCO.

Wu, J., (2009) "Intention or Behavior, on Which Should Researchers Concentrate?" In Proceedings for the Diffusion Interest Group in Information Technology (DIGIT) Conference. Yan, W., and Huang, J. 2014. "Microblogging
Reposting Mechanism: An Information

Adoption Perspective," *Tsinghua Science and Technology* 19(5), 531-542.