

Exploring Factors Influencing Acceptance Use of Oman Virtual Science Library (Masader) in Sultanate of Oman

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Abstract

This study investigated factors that influence faculty members attitudes toward accepting Masader e-resources at the higher education in Sultanate of Oman, this is due to the unexpected decrease after the first year of use by the academics. To achieve this, a set of behavioral factors has been relied upon, such as the behavioral intention (BI) and the perceived usefulness (PU) and perception of easiness (POE). These factors may also be affected and related to other external factors such as system quality. The relationships between these different factors are also formulated as hypotheses to verify their stability and validity.

The study population consists of this study will only focus on academics in universities and colleges in the Sultanate of Oman. The researcher used mixed methods for the current investigation, where both qualitative and quantitative approaches are joined for a blend of data. The study found a direct relationship between (POE& PU) and the (BI) to use, and direct relationship between (SQ) and (POE& PU), which in turn affects (BI) to use.

Keywords: Masader, Technology Acceptance Model (TAM), perception of easiness (POE), perceived usefulness (PU), behavioral intention (BI), system quality (SQ).

1. Introduction

The utilize of e-resources by academics and researchers, it is, therefore, a significant zone of research in recently information environment. It has turned to an essential part of institutions in higher education as it plays a necessary function in gathering the needs of these institutions from information and communication. Sejane (2017) concur that e-resources enable access to a broad domain of data from anywhere in the world, such as up-to-date scientific papers. It allows educational institutions to share information and to organize the output to a wider user with websites. There are International efforts around the world to let access and use of e-resources in academic digital libraries.

However, the acceptance of the use of e-resources by users in general and academics and researchers, in particular, is still, a significant variable to judge the success of the effectiveness and confidence of this type of information in education and research (Kelson, 2016).

1.1 Problem Statement

This study aims to explore system quality factors (SQ) that impact the academics adoption e-resources of Oman virtual science library (Masader) in higher education institutions in sultanate of Oman.

1.2 Research Aims and Objectives

1. Identify the relationship between (perception of easiness and perceived usefulness) with the behavioral intention to adopt the use of Masader.
2. Evaluate the relationship between the system quality and behavioral intention to adopt the use of Masader.

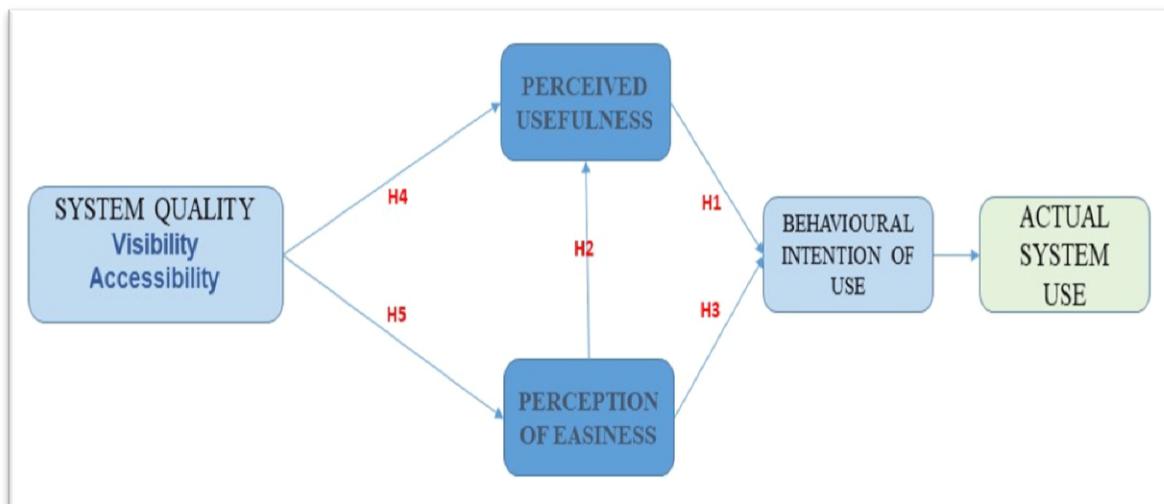
1.3 Research Questions

1. What is the relationship between (perception of easiness and perceived usefulness) and the behavioral intention to adopt the use of Masader?
2. How will relationship between the system quality and behavioral intention of the academics affecting the use of Masader?

1.4 Hypotheses

- H1. Perceived usefulness has positive effects on behavioral intention to use Masader.
 H2. Perception of easiness has positive effects on perceived usefulness.
 H3. Perception of easiness has positive effects on behavioral intention to use Masader.
 H4. System quality has positive effects on perceived usefulness.
 H5. System quality has positive effects on the perception of easiness.

Figure: 1



Hypothesized model

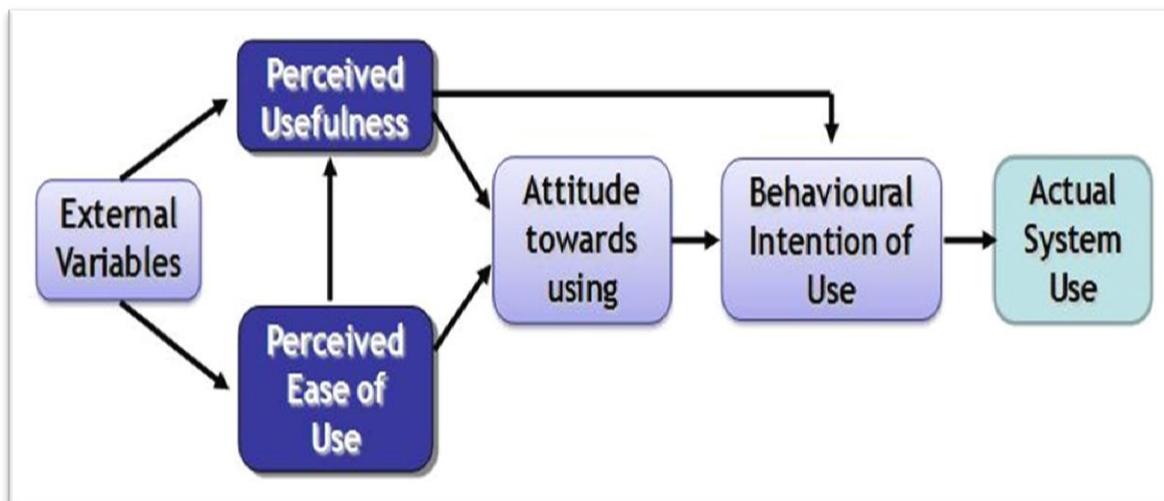
6. LITERATURE REVIEW

6.1 Tam

Technology Acceptance Model (TAM) is the most commonly used model of all the above-listed mentioned models and theories in IT and IS. In addition, TAM has drawn researchers' attention to studying technology adoption and they focused more on these problems (Alkandari, 2015). Technology adoption has actually achieved importance through TAM (Davis, Bagozzi & Warshaw, 1989). This is due to the reasons put forward by Davis (1989), who declares that there has been a deficiency in the field of IT, as regards valid and high-quality measures to predict the extent of user acceptance, its relationship to system usage and its associations with the system being used. As a result, TAM has introduced a suitable scale for predicting users' acceptance and the usage of technology, based on perceived usefulness and perceived ease of use

Furthermore, TAM has been widely applied, validated and successful in higher education. There is significant TAM applicability most experienced research regarding the investigation of academics' and students attitudes and behavior towards technology in higher education, for example online discussion forums (Adetimirin, 2015), web-based learning systems (Yeou, 2016), social networks using in Higher Education (Dumpit & Fernandez, 2017), Wiki Technology (Altanopoulou & Tselios, 2017), internet (Mallya & Lakshminarayanan, 2017). TAM also has been used to study the adoption of e-resources in higher education (Sadiku & Kpakiko, 2017; Fasi, 2018; Lwoga & Sife, 2018).

Figure: 2



Technology Acceptance Model (TAM)

6.2 System Quality (SQ)

The previous studies differed in the classification of the variables that may fall under the name of the variable information system quality. Singh (2015) study included Indian faculty and other

users suggest that digital libraries may become more helpful and acceptable to targeted user groups when created in line with system quality.

In this study, the researcher will study three variables: visibility and accessibility, and thus indirectly affect the dependent variable "behavioral intention of use" (Hong et al, 2002; Thong et al, 2002).

7. Methodology

7.1 Research Approach

This research will adopt the mixed method approach, which Creswell (2014) defined as "approach to inquiry that combines both qualitative and quantitative forms of research". It involves philosophical assumptions; the implementation of qualitative and quantitative approaches and the combining or integration of both techniques will use into a search.

7.2 Population and Sampling

According to the Ministry of Higher Education statistics (2019), there were (2727) academics in 30 institutions they are members of the e-resources service of Masader. According to that, the recommended size for the survey sample is (337).

7.3 Data Collection

The questionnaire will include a number of questions to help the researcher to collect data on the study subject, and answer the hypotheses raised. The second phase of the research will involve interviewing academics, the researcher selected (10) academics from the total who agreed to conduct an interview with them in the question asked in the online questionnaire.

8. Findings

8.1 Demographic data

8.1.1 Gender

As depicted in Table 1, the majority of the respondents are males with 67.6% compared to 32.4% of females. that is mean 3 in 10 respondents were females.

Table: 1 The effect of Gender on the Behavioral Intention (BI).

Gender	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Sig. (2-tailed)
Male	304	214.93	65338.50	18978.500	.002
Female	146	247.51	36136.50		
Total	450				

8.1.2 Age

The results of the distribution of respondents among age groups indicate that more than half of the respondents are between the ages of 36-45 (52%), and Respondents from the age group 23-30 represent the lowest percentage among the total which is about 9.8%. Table 2 illustrate the frequency and percentage of each age group.

Table: 2 The effect of Age on the Behavioral Intention (BI).

Age	N	Mean Rank
23-30	44	201.64
31-35	66	231.83
36-40	116	246.50
41-45	122	226.17
more than 45	102	207.01
Total	450	
Chi-Square	10.288	
Sig.	.036	

8.1.3 Academic Experience

When examining the academic experience of the respondents, the majority of respondents (96%) have academic experience of more than 16 years, whilst 20% have academic experience between 6 and 10 years, and around 10.9% have academic experience between 1 and 5 years. Finally, those with average academic experience (between 11 and 15 years) constituted approximately 3.1% of the total respondents (Table 3).

Table: 3 The effect of Academic Experience on the Behavioral Intention (BI).

Academic Experience	N	Mean Rank
1-5 years	49	128.56
6-10 years	90	256.06
11-15 years	14	293.00
16-20 years	179	215.99
more than 20 years	118	248.86
Total	450	
Chi-Square	62.299	
Sig.	.000	

8.3 Results relating to the research questions and hypotheses.

Q1. What is the relationship between (Perception Of Easiness and Perceived Usefulness) and the Behavioral Intention to adopt the use of Masader?

Table 5 shows the link between (Perception Of Easiness and Perceived Usefulness) and (Behavioral Intention). It is clear that all correlation coefficients are statistically significant at the level of (0.000) which is a value less than (0.05), and that the highest value between the behavior intention and the perceived usefulness (.508), and it is a positive and moderate

relationship. Moreover, the perception of ease is closely related to behavioral intention (.432), but less than the perceived usefulness, both of which are positive.

Table: 5 Correlation Coefficient between (POE & PU) and (BI).

Spearman's rho		Perception of Easiness (POE)	Perceived Usefulness (PU)
Behavior Intention (BI)	Correlation Coefficient	.432 ^{**}	.508 ^{**}
	Sig. (2-tailed)	.000	.000
	N	450	450

** . Correlation is significant at the 0.01 level (2-tailed).

Three hypotheses fall under the first question:

H1. Perceived usefulness has positive effects on behavioral intention to use Masader.

Table 6 shows that the correlation coefficient is positive and statistically significant, as the calculated correlation coefficient value is equal to (.508), which is significant at the level of (0.000) which is a value less than (0.05), which indicates a positive and moderate relationship that links between the Perceived usefulness and the behavioral intention to use, and this result confirms the first hypothesis.

Table: 6 Correlation Coefficient between (PU) and (BI).

Spearman's rho		Perceived Usefulness (PU)
Behavior Intention (BI)	Correlation Coefficient	.508 ^{**}
	Sig. (2-tailed)	.000
	N	450

H2. Perception of easiness has positive effects on perceived usefulness.

Table 7 demonstrates that the correlation coefficient is positive and statistically significant, as the calculated correlation coefficient value is equivalent to (.592), which is significant at the level of (0.000) which is a value less than (0.05), which indicates a positive and moderate relationship that links between the Perception of easiness and Perceived usefulness, and this result confirms the second hypothesis.

Table: 7 Correlation Coefficient between (PU) and (POE).

Spearman's rho		Perception of Easiness (POE)
Perceived Usefulness (PU)	Correlation Coefficient	.592 ^{**}
	Sig. (2-tailed)	.000
	N	450

H3. Perception of easiness has positive effects on behavioral intention to use Masader.

Table 8 reveals that the correlation coefficient is positive and statistically significant, as the estimated correlation coefficient value is equivalent to (.432), which is significant at the level of (0.000) which is a value less than (0.05), which indicates a positive and moderate relationship that links between the Perception of easiness and behavioral intention, and this result confirms the third hypothesis.

Table: 8 Correlation Coefficient between (POE) and (BI).

Spearman's rho		Perception of Easiness (POE)
Behavior Intention (BI)	Correlation Coefficient	.432**
	Sig. (2-tailed)	.000
	N	450

Q2. How will relationship between the system quality and behavioral intention of the academics affecting the use of Masader?

Table 9 shows the correlation between (System Quality) and (Behavioral Intention). It is clear that correlation coefficients are statistically significant at the level of (0.000) which is a value less than (0.05), and that the highest value between the behavior intention and the sub variables of System Quality, we can see that Accessibility (AC) have more effect in Behavior Intention to use E-resources (.591), and Visibility (VI) have the lowest effect (.289).

Table: 9 Correlation Coefficient between (ID) and (BI).

Spearman's rho		VI	AC	IQ	System Quality (SQ)
Behavior Intention (BI)	Correlation Coefficient	.289**	.591**	.455**	.434**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	450	450	450	450

In this regard, the researcher also assumed two hypotheses which fall under the third question, considering that the belief variables (PU, POE) are intermediate variables which are affected by external variables (ID, SQ) and affect the behavioral variable (BI).

H4. System quality has positive effects on perceived usefulness.

Table10 indicates that the correlation coefficient is positive and statistically significant, as the calculated correlation coefficient value is equivalent to (.333), which is significant at the level of (0.000) which is a value less than (0.05), which indicates a positive and almost moderate relationship that links between the System quality and Perceived usefulness, and this result confirms the sixth hypothesis.

Table:10 Correlation Coefficient between (ID) and (PU).

Spearman's rho		System Quality (SQ)
Perceived Usefulness (PU)	Correlation Coefficient	.333**
	Sig. (2-tailed)	.000
	N	450

H5. System quality has positive effects on the perception of easiness.

Table 11 reveals that the correlation coefficient is positive and statistically significant, as the estimated correlation coefficient value is equivalent to (.644), which is significant at the level of (0.000) which is a value less than (0.05), which indicates a positive and moderate relationship that links between the System quality and Perception of easiness, and this result confirms the seventh hypothesis.

Table: 11 Correlation Coefficient between (ID) and (POE).

Spearman's rho		System Quality (SQ)
Perception of easiness (POE)	Correlation Coefficient	.644**
	Sig. (2-tailed)	.000
	N	450

Included under the first three questions are the seven study hypotheses, which explain the nature of correlation and influence between the external variables and the belief variables and the behavioral variable, and the Spearman coefficient test has been applied to reveal the nature of these relationships. Figure 4.23 illustrates these relationships.

9. Discussion

- *Q 1. What is the relationship between (perception of easiness and perceived usefulness) and the behavioral intention to adopt the use of Masader?*

Three hypotheses under this question will be discussed:

H 1. Perceived usefulness has positive effects on behavioral intention to use Masader.

The correlation coefficient for this hypothesis indicates a statistically significant positive effect of perceived usefulness on academic's behavioral intention to use Masader. This result is in line with the findings of Joshua& King (2020), Adeoye& Olanrewaju (2019), Ju& Albertson (2018), Izuagbe (2016), Mallya (2017). All of these studies affirm that increased adoption of any technology is facilitated by increasing user perception of the usefulness of the technology in question. This leads us that academics who perceive Masader is useful are more likely to have a positive behavioral intention towards using it.

Most of those interviewed answered that e-resources are very useful in many aspects, whether those related to education or scientific research such as improving performance, increasing efficiency and productivity, and saving the time of the beneficiary from the service and the financial costs incurred by the institution as a result of traditional subscriptions to the printed periodicals. Many of those interviewed also praised the use of technology in education, and encouraged the use of advanced communication technologies that could connect education workers around the world.

H 2. Perception of easiness has positive effects on perceived usefulness.

The correlation coefficient for this hypothesis indicates a statistically significant positive effect of the Perception of easiness and Perceived usefulness. No amount of ease of use will compensate for a system that does not do a useful job. However, the significant impact of perception of easiness on perceived usefulness assumes the important role that easiness plays in making the system useful. In order to increase the perceived usefulness, the capabilities of the system must match those of those who benefit from the system. This finding confirms with previous studies carried out by Mallya (2017) and Ju& Albertson (2018). These studies indicate that perception of easiness can indirectly affect a user's behavioral intention by affecting the perceived usefulness.

H 3. Perception of easiness has positive effects on behavioral intention to use Masader.

The correlation coefficient for this hypothesis indicates a statistically significant positive effect of the perception of easiness and behavioral intention. the study finding is consistent with the studies conducted by Park et al. (2009), Mallya (2017), Elst (2019) and Ju& Albertson (2018). Perception of easiness showed a lower effect on academic's behavioral intention in comparison with perceived usefulness, this can be attributed to the skills that academics possess in dealing with technology, whether they acquired during their studies or after joining higher education institutions, this has contributed greatly to facilitating their use of electronic information sources and other existing information systems, perhaps because the target population (academics in higher education institutions) were in an academic environment saturated with technology, and this is evident from the descriptive data for the study sample. This in turn, underlines the seriousness of perceived usefulness in academics Masader e-resources usage. This finding is inconsistent with the finding of studies, which emphasizes that the effect of both beliefs (ease and usefulness) is equal to behavioral intent (Agarwal& Prasad, 1999; Joshua& King, 2020; Adeoye& Olanrewaju, 2019).

- *Q 2. How will relationship between the system quality and behavioral intention of the academics affecting the use of Masader?*

In this study, the researcher studied three variables: visibility (VI) and accessibility (AC). and thus, indirectly affect the dependent variable behavioral intention of use (BI) (Hong et al, 2002; Thong et al, 2002).

From the study results, it is clear that correlation coefficients are statistically significant we can see that Accessibility (AC) have more effect in Behavior Intention to use E-resources than Visibility (VI). The researcher also assumed two hypotheses which fall under the third question, considering that the belief variables (PU, POE) are intermediate variables which are affected by external variables (SQ) and affect the behavioral variable (BI).

H 4. System quality has positive effects on perceived usefulness.

the results indicate that the correlation coefficient is positive and statistically significant, as the calculated correlation coefficient value is equivalent to (.333), and this result confirms the sixth hypothesis.

H 5. System quality has positive effects on the perception of easiness.

The present study confirmed that the correlation coefficient is positive and statistically significant, as the estimated correlation coefficient value is equivalent to (.644), and this result confirms the seventh hypothesis. From the comparison of the results of the two hypotheses, it becomes clear to us again that the effect of system quality on the perception of easiness is greater than its effect on perceived usefulness, because the easiness of the system to the users will reflect the first impression at the users about the IS available. As it is more likely that academics will use e-resources because of their better interaction experience with Masader due to ease of use in terms of Accessibility and Visibility, this does not mean that the impact of the system quality on the perceived usefulness does not exist, but rather is directly and indirectly, However, the effect on the perception easiness remains greater. The results in the current study with studies conducted by Donkor& Filson (2017), Adegboro (2011), Zalah (2018), Park et al. (2009) and Ju& Albertson (2018), Alshomrani (2019) which indicate that accessibility is the first thing the user faces when using the information system, if there is an ease in entering the system, this will affect his desire to accept this system for use in retrieving the information, and vice versa. This studies confirm that accessibility is one of the key variables that significantly influence the perception of easiness with faculty members in academic institutions, also indicated that system visibility as a factor has a strong positive effect on the perception of easiness, while Inconsistent with Thong (2002) finding that shows that the system's visibility has a significant and direct influence on the perceived usefulness more than the perception of easiness.

10. Conclusion

This study aims to identify system quality (SQ) that impact the academics adoption e-resources of Oman virtual science library (Masader) in higher education institutions in sultanate of Oman, through the application of the (TAM) technology acceptance model. The study found a direct relationship between belief variables (perception of easiness, perceived usefulness) and the behavioral intention to use. The study also found that there is a direct relationship between external variable (system quality) and belief variables (perception of easiness, perceived usefulness), which in turn affects the behavioral intention to use. These results acquire great importance in understanding the factors that affect the acceptance of faculty members in the in higher education institutions in sultanate of Oman, to use Masader to accomplish their academic and research tasks.

References

- Adetimirin, A. (2015). An empirical study of online discussion forums by library and information science postgraduate students using Technology Acceptance Model 3. *Journal of Information Technology Education: Research*, 14, 257-269
- Alkandari. B. (2015). An Investigation of the Factors Affecting Students' Acceptance and Intention to Use E-Learning Systems at Kuwait University: Developing a Technology

Acceptance Model in E-Learning Environments. *Doctoral thesis*, Cardiff Metropolitan University, Cardiff.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: a comparison of two theoretical models. *Management Science*, 53, 982-1003.

Sejane, L. (2017). Access to and use of electronic information resources in the academic libraries of the Lesotho library consortium. *Doctoral thesis*. University of Kwa Zulu Natal, Pietermaritzburg.

Adegbore, A. M. (2011). University faculty use of e-resources: a review of the recent literature. *Pnla Quarterly*, 175 (4), 717-721.

Adeoye, A. & Olanrewaju, A. (2019). Use of technology acceptance model (tam) to evaluate library electronic information resources use by undergraduate students of Lead City University, Ibadan, Nigeria. *Library Philosophy and Practice*, 2471. <https://digitalcommons.unl.edu/libphilprac/2471>

Agarwal, R., & Prasad, J. (1999). Are individual differences germane to the acceptance of new information technologies? *Decision Sciences*, 30 (2), 361-391.

Al-Alawi, Y. (2013). The extent of the use of e-resources by the faculty members of the colleges of Applied Sciences in the Sultanate of Oman: Application technology acceptance model. *Master thesis*. Sultan Qaboos University. Muscat.

Al-Alawi, Y., Al-Saqri, M. & Al-Harasi, N. (2014). Measuring the extent of faculty member's acceptance in the Colleges of Applied Sciences for electronic information sources. *Twentieth Conference of the Special Libraries Association - Gulf Chapter*, Doha - Qatar

Alshomrani, A. A. (2019). Faculty members' ability to use the Shms platform at Saudi universities. *Journal of Educational and Psychological Sciences*, Volume (3), Issue (28): 30 Nov 2019 P: 96 – 130.

Altanopoulou, P. & Tselios, N. (2017). Assessing Acceptance toward Wiki Technology in the Context of Higher Education. *International Review of Research in Open and Distributed Learning*, Volume 18, Number 6, 127-149.

Davis, F. D. (1989), "Perceived usefulness, perceived ease of use, and user acceptance of information technology", *MIS Quarterly*, 13 (3): 319–340, doi:10.2307/249008, JSTOR 249008

Davis, F. D. (1993). User acceptance of information technology: system characteristics, user perceptions and behavioral impacts. *International Journal of Man-Machine Studies*. 38, (3), 475– 487

Donkor, G. & Filson, C. K. (2017). Use of internet resources in higher education: a case of faculty of arts of the University Of Cape Coast, Ghana. *International journal of knowledge-based computer systems*, 5 (2), 17-24.

Dumpit, D. Z. & Fernandez C. J. (2017). Analysis of the use of social media in Higher Education Institutions (HEIs) using the Technology Acceptance Model. *Dumpit and Fernandez International Journal of Educational Technology in Higher Education* (2017) 14:5.

Elst, H. V. (2019). Foundations of Descriptive and Inferential Statistics. *Parc IT GmbH Erftstraße 15 50672 Köln, Germany*.

Fasi, M. H. (2018). Attitudes of Saudi Arabian Students toward the Use of Digital Libraries in Higher Education. *Doctoral thesis*, University of Kansas.

Hong, W., Thong, J. Y. L., Wong, W.M., & Tam, K.Y. (2002). Determinants of user acceptance of digital libraries: An empirical examination of individual differences and system characteristics. *Journal of Management Information Systems*, 18(3), 97–124.

- Izuagbe, R.; Hamzat, S. A. & Joseph, E. I. (2016). Electronic information resources (EIR) adoption in private university libraries: the moderating effect of productivity and relative advantage on perceived usefulness. *Journal of information science theory and practice*, 4(1), 30-48.
- Joshua, D.& King, L. (2020). The Utilization of e-resources at Modibbo Adama University of Technology (MAUTech), Yola, Adamawa State, Nigeria. *International Journal of Knowledge Content Development & Technology*, 10(1), 47-70.
- Ju, B., & Albertson, D.E. (2018). Exploring factors influencing acceptance and use of video digital libraries. *Inf. Res.*, 23.
- Kelson. C. K. H. (2016). A Correlation Study of the Technology Acceptance Model and Higher Education Faculty e-Textbook Adoption. *Doctoral thesis*. Northcentral University. Arizona.
- Lwoga, E. T. & Sife, A. S. (2018). Impacts of quality antecedents on faculty members' acceptance of electronic resources. *Library Hi Tech*, Vol. 36 Issue: 2, pp.289-305, <https://doi.org/10.1108/LHT-01-2017-0010>
- Mallya, J. & Lakshminarayanan, S. (2017). Factors influencing usage of internet for academic purposes using technology acceptance model. *DESIDOC Journal of Library & Information Technology*, Vol. 37, No. 2, 119-124.
- Park, N., Roman, R., Lee, S., & Chung, J. E. (2009). User acceptance of a digital library system in developing countries: An application of the Technology Acceptance Model. *International Journal of Information Management*, 29(3), 196-209.
- Sadiku, S. H. & Kpakiko, M. (2017). Computer Self-efficacy and Use of Electronic Resources by Students in Nigerian University Libraries. *Journal of Applied Information Science and Technology*, 10 (1).
- Singh, V. K. (2015). Quality Management System: A review. *10.13140/RG.2.1.3757.3363*.
- Thong, J. Y. L., Hong, W., & Tam, K. Y. (2002). Understanding user acceptance of digital libraries: What are the roles of interface characteristics, organizational context, and individual differences? *International Journal Human-Computer Studies*, 57 (3), 215–242.
- Yeou, M. (2016). An Investigation of Students' Acceptance of Moodle in a Blended Learning Setting Using Technology Acceptance Model. *Journal of Educational Technology Systems*, Vol. 44(3), 300–318
- Zalah, I. (2018). Factors That Influence Saudi Secondary Teachers' Acceptance and Use of E-Learning Technologies. *Doctoral Thesis*. University of Brighton.