

A Study on Factors that Influence the Usage of E-Resources among the Faculty Members in Engineering Colleges

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ABSTRACT

The present study analyzed the factors that motivate the faculty members of Engineering Colleges to use electronic resources. Three dimensions of the factors are investigated including Technology Acceptance Model (TAM) variables, characteristics of e-resources and demographic variables. The study was conducted among 350 faculty members of Engineering Colleges in Kanyakumari District, of which 281 responded the questionnaire positively. The response rate of the questionnaire is 80.3 per cent. The step-wise multiple regression analysis is carried out. The study revealed that usefulness dimension of TAM positively influenced the use of e-resources. The study was also found that majority of the faculty members are familiar with e-resources, frequency of using e-resources are more and they used simple and keyword search as search strategy.

KEYWORDS: User Studies, Electronic Resources, Academic Libraries, Faculty members, Engineering Colleges.

1. INTRODUCTION

Electronic information resources have become a major part of library collections in the modern libraries and the usage of e-resources have increased with time and it has become an inseparable part among the academic community consists of students, faculty and research scholars. In particular, libraries attached to the Engineering Colleges are fulfilling the information needs of faculty members for teaching, learning and research. Advancement of ICT based technology helps the faculty members to access e-resources beyond the four walls of the library and the concept of open access to scholarly communication makes the accessibility of scholarly literature.

Electronic resources: Electronic resources are the electronic representation of information sources. The electronic resources are systems in which information is stored electronically and made accessible through electronic systems and computer networks. Electronic resources are becoming very important these days as they are more up-to-date, and can be accessed anywhere, crossing all geographical boundaries. But it has significant value while conducting Research and Development activities.

E-resources include online databases, sources from web pages, e-journals articles, electronic personal papers, e-mail messages, news paper postings, newsletters, government publications, electronic theses and dissertations, e-news papers, CDs/DVDs and things of similar kinds either at free of cost or on payment.

Conceptual framework: The conceptual framework of the study is Technology Acceptance Model (TAM) propounded by Davis (1989). TAM assumes that usefulness and ease-of-use are the key determinants of technology selection and user attitude is placed between usefulness and ease-of-use and use intention. The study investigated the effects of the characteristics of e-resources on behavioural intention to use e-resources. Since users tend to find quality information to solve their research problems, the researcher assumed that improved resource quality would lead to increased user intention to select e-resources. Characteristics of e-resources are a multifaceted concept that consists of multiple constructs such as accessibility, credibility, currency, coverage, and format (Stvilia, Mon & Yi, 2009). The present study posits five constructs to represent the resource quality on e-resources based on characteristics of e-resources. They are accessibility, coverage, credibility, currency and format.

Need and significance of the study: The ICT based technological developments have forced the library and information centres from print sources to e-resources, more specifically to online and internet based applications for accessing and retrieval of information. Users in academic libraries of higher educational institutions opt for e-resources than the print sources due to flexibility of accessing current information and usefulness of e-resources. There are several factors such as age, negative attitude towards modern devices, anxiety, lack of proper guidance, lack of self interest; techno-phobia and lack of internet accessibility force them to keep away from using e-resources. No doubt, the internet is a boon for higher education and it is a facilitator for teaching, learning and research. Several studies have been conducted on various aspects related to electronic journals and e-resources at national and international level among the college students and among the members of the faculty. Studies have been carried out among the college teachers on use of internet resources (Saravanan, 2007), among the faculty members of United Arab Emirates University on the usage of electronic resources (Ibrahim, 2004), and representative studies on factors that influence the use of library resources by the faculty members at Technological Educational Institution of Thessaloniki (Korobili, 2005), barriers faced by the faculty members of Engineering Colleges (Hariharan & Saravanan, 2015). But a closer analysis of the available studies shows that factors that influence the use of e-resources among the faculty members of Engineering Colleges are scanty. The present investigators have realised the felt need

to fill this gap and hence motivated to take up a survey based study among the faculty members of Engineering Colleges.

Statement of the problem: Faculty members of Engineering College uses e-resources more frequently for their information requirements related to teaching, learning and research. The intensity of using e-resources is influenced by several factors. The present study is intended to identify the factors that influence the use of e-resources among the faculty members of Engineering Colleges and hence the problem for the present study is entitled as “**A Study on the Factors that Influence the Usage of E-Resources among the Faculty Members of Engineering Colleges**”.

Objectives of the study:

- i. To identify the familiarity of e-resources among the faculty members of Engineering Colleges
- ii. To analyse the search strategy adopted by the faculty members of Engineering Colleges.
- iii. To identify the frequently used e-resources by the faculty members of Engineering Colleges.
- iv. To identify the factors that motivates the faculty members of Engineering Colleges to use e-resources.

Hypotheses of the study:

Hypotheses framed for the study are:

- i. Familiarity of e-resources is more among the faulty members of Engineering Colleges.
- ii. There is no significant correlation between TAM variables, characteristics of e-resources and personal variables.

Limitations of the study:

Limitations of the study are:

- i. The present study is limited only to the factors of TAM variables, characteristics of e-resources and selected personal variables.
- ii. The present study is limited only to the faculty members of Engineering Colleges only, faculty members of Arts and Science Colleges and other colleges are excluded from the study.

2. METHODOLOGY

The present study is descriptive and analytical in nature and hence survey method is adopted for collection of primary data from the faculty members of Engineering Colleges. The secondary data like review of literature and other information are collected from the books, journals, magazines, newspapers, and report of research studies.

Population of the Study: The study is intended to identify the factors that influence the use of e-resources among the faculty members of Engineering Colleges. Thus, the population for the present study is faculty members of Engineering Colleges in Kanyakumari District.

Sample of the Study: The present study is based on the opinion of 281 respondents from Engineering Colleges. Therefore, sample for the study is 281 faculty members from Engineering Colleges.

Tools Used for the Study: The tool used for the study is a well structured questionnaire prepared by the investigator in consultation with experts after conducting a pilot study. It includes demographic variables of the respondents; questions measuring various aspects related to user behaviour on e-resources; questions to assess in formation literacy; opinion on e-resources especially on usefulness and ease-of-use; attitude and intention to use e-resource; on quality parameters namely accessibility, coverage, credibility, currency and format.

Data Collection: The questionnaire is administered among the 350 faculty members of 22 Engineering Colleges in the district belonging to different subjects of various disciplines. Selection of the sample is done on the basis of stratified random sampling technique by giving due weight-age to various personal variables such as designation, gender, locale, discipline, years of experience, experience, and familiarity of computer. The collected questionnaires are edited, the incomplete ones are removed and finally 281 questionnaire are complete in every respect is selected for analysis. The response rate is 80.3 per cent.

Statistical Techniques Used: By keeping the objectives and hypotheses of the study, both the inferential and descriptive statistics are used for analysis and interpretation of data. The statistical techniques used are: Percentage Analysis; Descriptive Statistics like Mean, and Standard Deviation; Inferential statistics like ‘t’ test for independent means, and One way ANOVA; Karl Pearson Product moment method of correlation (r), and Step-wise Multiple Regression analysis. The collected data are analysed using SPSS (Software Package for Social Sciences) version 17.0 and interpreted accordingly.

Analysis and interpretation of data: The collected data are analysed and presented under various subheadings.

Demographic Variables: The gender wise classification of the respondent shows that majority of the respondents are male (52.4 per cent) and the remaining are female. Also, majority of the respondents are hails from rural background (58.4 per cent) and the remaining 117 out of 281 from urban background. Moreover, 50.8 per cent of the respondents of age group between 30-40 years, 33.4 per cent belong to age less than 30 years and 12.2 per cent of the respondents have age greater than 40 years. Experience of the faculty also reveals that 54 per cent of the respondents have experience between 5-10 years, 30.6 per cent of the respondents have experience up to five years and 11.4 per cent have experience more than 10 years. Similarly, 47.4 per cent of the respondents have use computer under intermediate category, 43 per cent of the computer under advanced user of computer and 9.6 per cent of the respondents are beginners in computer.

Familiarity of E-Resources: Familiarity of e-resources among the faculty members of Engineering Colleges are rated in a three point scale namely 'well familiar', 'somewhat familiar' and 'not familiar'. The familiarity of e-resources among the faculty with respect to type of college is summarized in Table 1.

Table.1.Familiarity of E-Resources

Sl. No.	Familiarity of E-Resources	Respondents	Percent
1	Well Familiar	164	58.4
2	Somewhat Familiar	108	38.4
3	Not Familiar	9	3.2
	Total	281	100

Source: Primary Data

Table 1 reveals that majority of the respondents (58.4 per cent) are well familiar with the e-resources, 38.4 per cent are somewhat familiar with e-resources and 3.2 per cent of the respondents are not familiar with e-resources.

Frequency of Using E-Resources: The frequency of using e-resources by the faculty depend on several factors such as type of activities in which they involved in the college including information requirements for their day-to-day teaching, learning and research activities. The frequency of using e-resource by the faculty members of Engineering Colleges is summarized in Table 2.

Table.2.Frequency of Using E-Resources

Sl. No.	Frequency	Respondents	Percent
1	Daily	158	56.2
2	Two to Three times in a week	85	30.2
3	Once in a week	29	10.4
4	Once in a Fortnightly	3	1.06
5	Once in a Month	6	2.1
	Total	281	100

Source: Primary Data

Table 2 indicates that majority of the faculty members (56.2percent) use e-resources daily for their day-to-day teaching and research activities. However, 85 out of 281 respondents (30.2 per cent) use e-resources two to three times in a week, 10.4 per cent of the respondents use at least once in a week, 1.06 per cent of them use at least once in fortnightly and 2.1 per cent uses at least once in a month.

Reasons for Using E-Resources: E-resources are accessed by the faculty members for various reasons ranging from day-to-day teaching and research activities. The various reasons for accessing e-resources by the respondents of the study are summarized in Table 3.

Table.3.Reasons for Using E-Resources

Sl. No.	Reasons for Using E-Resources	Respondents	Percent
1	Teaching	247	87.9
2	Research	206	73.3
3	Undertaking/Supervising Project	109	38.8
4	Scholarly Communication	96	34.2
5	Current Information	199	70.8
6	Updating Knowledge	93	33

Multi-Response Item: Table 3 shows that the reasons for using e-resource among the faculty members of Engineering Colleges based on multi-response questions. Reasons for using e-resources by the faculty members are in the order as follows: teaching (87.9 per cent), research (73.3 per cent), and current information (70.8 per cent), for undertaking/supervising projects (38.8 per cent), for scholarly communication (34.2 per cent) and for updating knowledge (33 per cent).

Search Techniques used by the Faculty Members: Retrieving information from the electronic resources is depending on framing effective search strategies. There are several standard search techniques for retrieval of relevant and required information. Search techniques adopted by the faculty members for accessing e-resources are given in Table 4.

Table.4. Search Techniques for Accessing E-Resources

Sl. No.	Search techniques	Respondents	Percent
1	Simple Search	102	36.3
2	Keyword Search	94	33.5
3	Boolean Operators	20	7.2
4	Digital Object Identifiers	25	8.8
5	Subject Term Search	40	14.2
Total		281	100

Source: Primary Data

Faculty members of Engineering Colleges follow the search techniques as follows; simple search (36.2 per cent), keyword search (33.4 per cent), subject term search (14.2 per cent), digital object identifier (8.8 per cent) and Boolean operators are followed by 7.2 per cent.

Frequently Used E-Resources: There are varieties of e-resources to meet the information requirements of the faculty members of Engineering Colleges. The frequency of using e-resources by the faculty members are assessed based on their rating on three point scales namely, frequently, sometimes and never. The opinion of the respondents is given in Table 5.

Table.5. Frequency Using E-Resources by Faculty Members

Sl. No.	Frequency of Using e-Resources	Frequently	Sometimes	Never
1	E-Journals	196(69.8)	70(25.0)	15(5.4)
2	E-Books	140(49.8)	134(47.6)	7(2.5)
3	Databases	136(48.4)	125(44.4)	20(7.2)
4	Reference Sources	108(38.4)	156(56.2)	15(5.4)
5	Technical Reports	125(44.4)	133(47.4)	23(8.2)
6	ETDs	65(23.2)	155(55.2)	61(21.8)
7	Conference Proceedings	129(45.9)	119(42.3)	33(11.8)
8	Discussion Groups	82(29.2)	152(54.0)	47(16.8)
Total		281		

Source: Primary Data

Table 5 reveals that 69.8 per cent of faculty from Engineering Colleges frequently use e-journals; 49.8 per cent and 47.6 percent of the faculty are respectively uses e-books 'frequently' and 'sometimes'. E-databases are more frequently used by the faculty of Engineering College (44.4 percent); similarly, e-reference sources are more frequently used by the faculty members (38.4 percent). Similar trend is prevailed among other e-resources too, technical reports (44.4 percent), electronic theses and dissertations (23.2 percent), conference proceedings (45.9 percent) and discussion groups (29.2 percent) by the faculty of engineering colleges.

Correlation between TAM Variables and Characteristics of E-Resources: Work environment and information requirements of the faculty members are vary from one institution to another. Hence, the factors that influence the use of e-resources among faculty members among the Engineering Colleges may also vary. Thus, the inter relationships between the TAM variables and characteristics of e-resources is carried out and the details are given in Table 6.

Table.6. Correlation between TAM Variables and Quality Parameters – Engineering Colleges

	Usefulness	Ease of Use	Accessibility	Coverage	Credibility	Currency	Format	Attitude
Ease of Use	0.710**							
Accessibility	0.554**	0.571**						
Coverage	0.680**	0.568**	0.572**					
Credibility	0.623**	0.482**	0.232**	0.476**				
Currency	0.463**	0.219**	0.305**	0.485**	0.430**			
Format	0.361**	0.248**	0.306**	0.514**	0.373**	0.467**		
Attitude	0.614**	0.537**	0.527**	0.539**	0.412**	0.374**	0.369**	
Intention to Use	0.661**	0.475**	0.474**	0.590**	0.445**	0.524**	0.467**	0.489**

** is significant at 0.01 level

is significant at the 0.05 level

The Table 6 shows inter correlation between the TAM variables and quality parameters among the respondents of Engineering Colleges. The inter relation shows significant positive correlation at 0.05 level and the extent of correlation is strong except a very few (ease of use and currency & ease of use and format) among the faculty members. The strong positive correlation helps to identify the predicting factors.

Testing of Hypothesis:

Hypothesis: There is no significant correlation between TAM variables and characteristics of e-resources.

Table 6 shows that correlation exists between the variables are significant at 0.05 level. Therefore, the hypothesis is rejected at 0.05 level.

Correlation between the Demographic Variables and TAM Variables, Quality Parameters. The correlation between the demographic variables of the respondents with the TAM variables and characteristics of e-resources is calculated using correlation technique. The details of correlation analysis are given in Table 7.

Table.7. Correlation between the demographic variables and TAM variables, Quality Parameters

Type of College		Usefulness	Ease of Use	Accessibility	Coverage	Credibility	Currency	Format	Attitude	Intention to Use
Engineering Colleges	Gender	0.079	0.066	-0.021	-0.012	0.038	0.008	-0.014	-0.032	0.005
	Locality	-0.105	-0.052	-0.004	-0.030	-0.042	0.031	0.006	0.153*	0.010
	Age	0.059	0.175**	0.120*	0.061	0.082	-0.131*	-0.068	0.105	0.033
	Type of Institution	-0.032	0.066	0.015	-0.027	0.038	0.054	0.032	-0.115	0.067
	Discipline	-0.014	0.088	-0.034	0.041	0.044	-0.023	-0.061	0.016	0.044
	Experience	.001	0.096	-0.090	-0.008	0.051	-0.039	-0.114	-0.041	-0.089
	Use of Computer	-0.049	-0.079	-0.109	-0.013	-0.016	0.150*	0.043	-0.090	0.013
	Use of Internet	-0.096	-0.030	-0.110	-0.017	-0.048	0.026	0.125*	-0.098	-0.064
	Own Computer at Home	-0.090	0.008	-0.060	-0.032	-0.078	-0.075	-0.033	0.114	-0.162**
	Internet Facility at Home	0.081	0.045	-0.014	0.022	0.036	0.044	-0.082	0.054	0.065
	Information Literacy	0.639**	0.501*	0.367**	0.506**	0.524**	0.364*	0.295*	0.350*	0.520**

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

*Correlation is significant at the 0.05 level (2-tailed).

Table 7 shows that the demographic variables namely gender of the respondents, type of institution, discipline, experience, and internet facility at home have no correlation with the TAM variables and Quality parameters among the faculty members of Engineering Colleges. But, locality of respondents from Engineering College has negative significant correlation with attitude; age has significant positive correlation with ease-of-use and accessibility and negative correlation with currency; familiarity of computer has positive correlation with currency; familiarity internet has positive correlation with format of e-resources; and possession of computer by the respondents has significant negative correlation with intention to use e-resources among the faculty members. The extent of correlation between demographic variables and TAM variables and Quality parameters are very low and negligible.

Table also indicates that information literacy of the respondents of Engineering Colleges has significant positive correlation at 0.05 level with usefulness, ease-of-use, attitude and intention to use e-resources of TAM variables; and accessibility, coverage, credibility, currency and format of quality parameters. The extent of correlation between information literacy and usefulness is high, information literacy with ease-of-use, coverage, credibility, and intention to use has at moderate level; and information literacy with accessibility, currency, format and attitude is only at low level.

Testing of Hypothesis:

Hypothesis: There is no significant correlation between TAM variables, characteristics of e-resources and personal variables.

Table 7 shows that there is no significant correlation between the demographic variables and TAM variables and characteristics of e-resources except information literacy. Therefore, the hypothesis is accepted except information literacy.

Regression on Analysis of Factors predicting Intention to use e-resources among the Faculty Members of Engineering Colleges

The factors that influence the use of e-resources among the faculty members of Engineering Colleges are studied using step-wise multiple regression analysis. The details of regression statistic along with B coefficients and beta coefficients are given in Table 8.

Table.8.Factors Predicting the Intention to Use E-resources

Model No	Variable	R	R ²	Adj. R ²	B	β	t
1	Usefulness	0.661	0.437	0.435	0.450	0.661	14.702
2	Usefulness	0.705	0.497	0.494	0.271	0.278	5.803
	Currency				0.362	0.332	11.090
3	Currency	0.725	0.525	0.520	0.199	0.205	4.090
	Format				0.187	0.192	4.030
	Usefulness				0.338	0.497	10.450
4	Accessibility	0.731	0.534	0.527	0.090	0.111	2.296
	Currency				0.197	0.203	4.080
	Format				0.174	0.179	3.750
	Usefulness				0.259	0.434	8.200

Table 8 reveals that the model four has emerged as a best model to determine the use e-resources among the faculty members of Engineering Colleges. In model one, the variable usefulness alone can be emerged as variable to determine the use e-resources among the faculty members. The variable usefulness significantly determines 49.4 per cent of the total variance of behavioral intention to use e-resources. In model two, there are two variables namely usefulness and currency together determine 49.4 percent of the total variance explained of behavioral intention to use e-resources among the faculty members.

In the same way, there are three variables in model three together determines 52 percent of total variance explained of intention to use e-resources among the faculty members. In model four, the variables namely accessibility, currency, format and usefulness together determines 52.7 percent of the total variance explained of behavioral intention to use e-resources among the faculty members. Also the beta coefficients are positive which shows that these factors contributed positively. The variables accessibility, currency, and format; are characteristics of e-resources and usefulness is a variable of TAM and contributed significantly on use of e-resources.

Thus, it is interpreted that factors that influence the use of e-resources among the faculty members of Engineering Colleges are accessibility, currency, format and usefulness.

3. FINDINGS OF THE STUDY

Based on the analysis, the following are the findings:

- Majority of the faculty members (58.4 per cent) are well familiar with the e-resources. However, 38.4 per cent are somewhat familiar with e-resources.
- Majority of the faculty members (56.2percent) use e-resources daily for their day-to- day teaching and research activities. However, 85 out of 281 respondents (30.2 per cent) use e-resources two to three times in a week, and 10.4 per cent of the respondents use at least once in a week.
- Reasons for using e-resources by the faculty members are in the order as follows: teaching (87.9 per cent), research (73.3 per cent), current information (70.8 per cent), for undertaking/supervising projects (38.8 per cent), for scholarly communication (34.2 per cent) and for updating knowledge (33 per cent).
- Majority of the faculty members of Engineering Colleges frequently use e-journals.
- Simple and keyword search are used by the faculty members to access e-resources.
- There is no significant correlation between the demographic variables and TAM variables and characteristics of e-resources except information literacy.
- Accessibility, currency, format and usefulness of e-resources are the factors that influence the use of e-resources among the faculty members of Engineering Colleges.

4. CONCLUSION

The study reports the survey conducted among the faculty members of Engineering Colleges in Kanyakumari District to evaluate the factors that influence the use of e-resources. The study reveals that faculty members are familiar with e-resources and e-journals is the most frequently used e-resources. Faculty members have average level perception towards TAM variables and on quality parameters. Accessibility, currency, format and usefulness of e-resources are the factors that influence the use of e-resources among the faculty members of Engineering Colleges. Effective management of these factors helps the faculty to use e-resources at optimum level for the teaching, learning and research in higher education arena.

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