An Investigation into the Correlation among Academic Staff's E-journals Use, E-literacy Skills, Demographic variables and Research Productivity

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The study aimed to investigate relationship of academic staff's use of e-journals with demographic and profession related variables. The quantitative survey method was used to achieve the objectives of the study. The population of the study included academic staff of 12 faculties of the University of the Punjab. Self-administered questionnaire was distributed to 841 regular and contractual academic staff members with a response rate of 54 %. The results of the study found that the respondents' frequency of e-journals use was significantly related to their discipline, age, education, internet use, e-literacy skills and research output. However, e-journals use was not significantly related to their official position and gender. It is a valuable study as it comprehensively investigated correlation of certain variables with academic staff's use of e-journals in Pakistani perspective.

Keywords: E-journals use; E-literacy skills; Research Productivity; Academic Staff; University of the Punjab; Pakistan

INTRODUCTION

Print journals have remained the fundamental source of scholarly communication till 1980's, however, the studies were reported at the end of twentieth century regarding migration of journals from print to electronic format by serial librarians and researchers (Tenner and Yang, 2000; Johnson, 2004; Woo, 2005; Ferguson, 2006; Zimerman, 2010). They found that users' acceptance had been gradually increasing in favor of e-journals and users' preferences had been going through a gradual transition from print to electronic format. There has been a rapid growth in the number of e-journals being published.

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Currently, e-journals constitute a significant amount of scientific and technical literature. University libraries strive to meet researchers' needs for e-journals relevant to their subject as formal channels of scholarly communication. The study by Abdullah et al. (2015) based on focus groups of 48 Sciences and Social Sciences Malaysian researchers depicted that peer reviewed journals were still important for the authors. New forms of communication channels such as social media and new models of journals were not very popular in formal scholarly communication.

Borrego, Anglada, Barrios, and Garcia (2012) also confirmed that academics at Catalan universities read e-journals as a prime source of scientific information. Tenopir, King, Edwards and Wu (2009) found that scientists used journal articles as a principal source of information for scholarly work. Tenopir, Volentine and King (2012) assessed the value of access to scholarly publications and research output of academic staff of six universities of UK in a project. They stated that a well-resourced library has still an integral role to the overall strength and success of the institution. Academic staff who published more, also read more and majority of the academic staff obtained scholarly articles from library electronic collections.

STATEMENT OF THE PROBLEM

The researchers of the developed countries (Borrego, Anglada, Barrios & Comellas, 2007; Monopli et al., 2002; Smith, 2003 and Tenopir et al, 2003) have reported effects of demographic and profession related factors on academic staff's use of e-journals and found that the use of e-journals depended on age and gender. Rowland, Bell and Falconer (1997) highlighted the human and economic factors affecting researchers, students and academics use of e-journals. The human factors that influenced the adoption of e-journals in users included the interface, the hypertext structure, the searching and browsing functionalities and the speed of internet facilities.

Pullinger (1999) also stated that academic use of electronic journals was influenced by many factors such as user's discipline, their role and levels within the university, their local information environment of print and electronic resources, awareness of those resources and their information needs on a particular day. Research studies also established that use of e-journals varied greatly according to different subjects domain (Borrego et al., 2007; Nicholas et al., 2011; Sato et al., 2012; Dilek-Kayaoglu, 2008) and institutional differences also existed in relation to academic use of e-journals (Bravo and Diaz, 2011 and Nicholas et al. 2010).

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It shows that the researchers have investigated the influence of demographic, contextual, human and economic factors in various studies. There was a need for a study to investigate the relationship of both demographic and contextual variables on academic staff's frequency of e-journal's use in the local scenario.

LITERATURE REVIEW

Studies related to academic use of e-journals were reviewed and following factors were found to report their influence on e-journals use.

Gender, Age and User Group

Borrego, Anglada, Barrios and Comellas (2007) found that the use of e-journals varied depending upon age. Young academic staff was more frequent users of e-journals than the older (Monopli et al., 2002 and Smith, 2003). Use of electronic information resources also depended upon gender and it was explored by Monopoli et al. (2002) and Tenopir et al. (2003) that the male respondents were more frequent users of e-journals than the females.

Nicholas, Huntington, Jamali and Watkinson (2006) in a deep log analysis study of two packages of journals found in the use of e-journals depending on user groups. Professors and teachers were most likely to return to the site as compared to undergraduates and postgraduates. Degrote and Dorsch (2003) stated that variations were found in use patterns of online resources according to different user groups.

Discipline

Nicholas, Rowlands, Huntington, Jamali and Salazar (2010) investigated academic researchers' use behavior of e-journals. Raw logs of Science Direct were obtained to analyse researchers' behavior and findings showed that e-journals proved to be very popular with UK academic researchers and user's behavior varied markedly by subject. Life Scientists were much more likely to enter Science Direct through gateway site than economists.

Rowlands and Fieldhouse (2007) investigated users' scholarly information seeking behavior and reported that subject specialties or disciplines were most useful unit of analysis for studies of scholarly communication than studies at individual or journal level. In 2010, Tenopir, Wilson, Vakkari, Talja and King conducted a survey of academic staff's scholarly e-reading patterns in Australia, Finland and United States from 2004 to 2007. The findings revealed a lesser amount

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of variation in reading patterns of e-articles across countries and more within disciplines.

Talja and Maula (2003) determined the reasons of using e-journals and pointed out that use of e-journals and e-databases varied according to different subject domains due to differences in the search patterns of users. Borrego, et al. (2007) also confirmed the importance of discipline as an explanatory factor of the use of electronic journals. Nicholas et al. (2011) found that researchers across UK universities and research institutions behaved differently in different subjects. Researchers' use patterns of e-journals – Levels of usage, use of gateways and viewing of abstracts varied by subject and by institution even in the same discipline or subject.

Sato et al. (2012) in a survey of Japanese academic researchers and graduate students investigated their perceptions and usage of scholarly journals and articles. The researchers' preference and expectations were increased for e-journals. They noted that e-journals were not as heavily used in Humanities and Social Sciences as in Natural Sciences.

Dilek-Kayaoglu (2008) found that majority of e-journal users were from the discipline of Natural Sciences. Brown, Lund and Walton (2007) noted that commercial databases of e-journals were more important for Science faculty as compared to the Social Sciences and Humanities. There was a need for training in e-journals usage specially in managing e-journal references. Bonthron et al. (2003) also found disciplinary differences in the use of e-journals by academic staff and students.

Institutional Differences

Nicholas et al. (2010) noted that institutional differences exist in researchers' use of e-journals. Users in research intensive institutions behaved differently than those in less intensive institutions. Bravo and Diez (2011) also concluded that there were differences of e-journals use patterns in the five Spanish universities analysed. Termens (2008) conducted a study on the use of electronic journals licensed by the Consortium of Academic libraries of Catalonia in 2005 and log data of consumption of journal titles in one year was studied. Full time faculty members had access to equal number of journal titles at different institutions, however, results of the study indicated that consumption of journal titles was high in some institutions and even varied within a discipline. Institutional and disciplinary differences were found

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regarding consumption of journals. Access of more e-journal articles will lead to higher use of e-journals.

Research Productivity

Nicholas, Rowlands, Huntington, Clark and Jamali (2009) reported that the use of e-journals is strongly and positively correlated to papers published, number of Ph.D. research awards and research grants. Academic staff who publish more articles tend to read more journal articles (King et al. 2009 and Tenopir et al. 2010).

Convenience

User's preferences regarding the availability and accessibility of e-journals were also explored in a qualitative study of Dutch researchers (Voorbij and Ongering, 2006). The findings depicted that electronic journals were indispensible for scientists and social scientists. The interviewees agreed that the "accessibility twenty-four hours a day and seven days a week from their desktop was the key to the success of electronic journals" (p. 228). Tenopir et al. (2003) argued that users adopted those electronic information sources that were readily available and easy to adopt. Rowlands and Fieldhouse (2007) asserted the fact that convenience and digital visibility are crucial in future information landscape.

Convenience and full text availability seemed to play a role in selecting online resources. DeGrote and Dorsch (2003) also mentioned that databases without links to full text and online journal collection would have lower use. In 2007, Brown, Lund and Walton investigated academic staff and researchers' perceptions of e-journals use at Loughbrough University. Findings showed that they still wanted print journals but only in the case when electronic journals were not available. It showed that academic staff and researchers preferred electronic journals because of convenience.

Users wanted convenience in the use of information systems**.** Connaway, Dickey and Radford (2011) explored convenience as a critical factor in data of two multi-year user study projects. The findings suggested that convenience was used as a situational factor in both academic information seeking and everyday life information seeking. In some situations users will readily sacrifice content in favor of convenience. Convenience was a critical factor for all demographic characteristics. They noted that convenience was especially prevalent among younger respondents.

The review of literature shows that researchers investigated relationship between academic staff's frequency of e-journals use and demographic factors –

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age, gender, discipline, institutional differences and contextual factors – research productivity and convenience of use. It is evident that academic staff and researchers' use of e-journals varied due to demographic and contextual factors. Hence, these factors needed investigation in the perspective of a developing country like Pakistan.

RESEARCH OBJECTIVES

1. To determine relationship between academic staff's frequency of e-journal's use and demographic variables – Age, Gender, Designation, Discipline and Education.
2. To determine relationship between academic staff's frequency of e-journal's use and profession related variables - Internet Use, E-literacy skills and Research productivity.

METHODOLOGY

The study aimed to investigate relationship of academic staff frequency of e-journals use and demographic and profession related variables. Therefore, the design of the study was 'Quantitative' and the survey method was used to achieve its objectives. Creswell (2009) stated that "a survey design provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population". The setting of the study was University of the Punjab.

The population of the study included academic staff of 12 faculties of the University - Arts and Humanities, Behavioral and Social Science, Life Sciences, Science, Economic and Management Sciences, Commerce, Education, Engineering and Technology, Islamic Studies, Law, Pharmacy and Oriental Learning. The total population of academic staff of four campuses of the University was 1085 at the time of data collection. Academic staff works on regular, contractual and visiting basis (part-time) at the University. All academic staff working on regular and contractual basis was target sample for the survey. There were 949 members according to the list provided by the University administration.

The survey instrument of the study was 'Questionnaire'. The validity and reliability of the self-constructed questionnaire was established. Content validity is important especially for constructing a new instrument, hence it was decided to send it to the subject experts for evaluation. Modifications were made regarding content, scale and questionnaire layout as per their suggestions. Reliability of the questionnaire was established by measuring the Cronbach's alpha of items with

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Likert type scale. All the questions with Likert type scale had Cronbach's alpha value varying from 0.7 to 0.9.

Self-administered questionnaire was distributed to 841 academic staff members and 108 were on leave (study, maternity, others). The questionnaire was distributed personally and with the assistance of information professionals of academic departments. After follow up 457 respondents returned the questionnaire and response rate of 54 % was achieved. The data was analysed using SPSS and descriptive statistics and cross-tabulations were calculated.

RESULTS

The respondents were asked about their demographic and profession related characteristics – gender, age, academic designation, academic qualification, discipline, internet use, e-literacy skills and research productivity to explore the effects of these variables with the frequency of e-journals use. It was assumed that there might be an association between frequency of e-journals' use and these variables.

Demographic Characteristics

Table 1 provides the frequency distribution of respondents' demographic characteristics – gender, age, academic designation and academic qualification. It shows a slightly higher percentage of male respondents 236 (53 %) than female respondents 210 (47 %). Out of 457 respondents, 11 didn't reveal their gender.

The respondents were also asked about their age group as they were serving in different academic designations. Again, 15 respondents did not reveal their age. Table 1 shows that 191 (43 %) respondents belonged to age group '23-33' years and 149 (34 %) were of '34 to 44' years of age. Only 23 (5 %) respondents were 'Over 55' years old. Table 1 indicates that there were more respondents of age 23 to 33 than respondents of age group 34 to 44 and above.

The respondents were asked to mention their academic designation. Frequency distribution of the respondents' academic designation from Table 1 shows that both the 'Lecturers' (n=197) and 'Assistant Professors' (n=182) make nearly 86 % of the respondents (n=439). There were 29 (7%) Associate Professors and 30 (7%) Professors.

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Table 1

Frequency Distribution of Demographic Characteristics

Characteristics	Frequency	Percentages %
Gender		
Male	236	53
Female	210	47
Total (n)	446	100
Missing	11	
Age		
23-33	191	43
34-44	149	34
45-55	79	18
Over 55	23	5
Total	442	100
Missing	15	
Academic Designation		
Lecturer	197	45
Assistant Professor	182	41
Associate Professor	29	7
Professor	31	7
Total	439	100
Missing	18	
Academic Qualification		
MA	54	12
MPhil	182	42
Ph.D.	199	46
Total	435	100
Missing	22	

Frequency distribution of the respondents' academic qualification from Table 1 reveals a higher percentage of Ph.D. respondents 199 (46 %) as compared to both M.Phil. 182 (42 %) and MA 54 (12 %) respondents. It shows a trend of increase in number of respondents with the higher academic qualification.

Respondents' Discipline

Figure 1 provides graphic representation of the respondents' disciplines. University of the Punjab (PU) offers various academic programmes under 13 faculties. The discipline of 'Medicine and Dentistry' had no on-campus academic staff and students, therefore, it was excluded from the targeted population.

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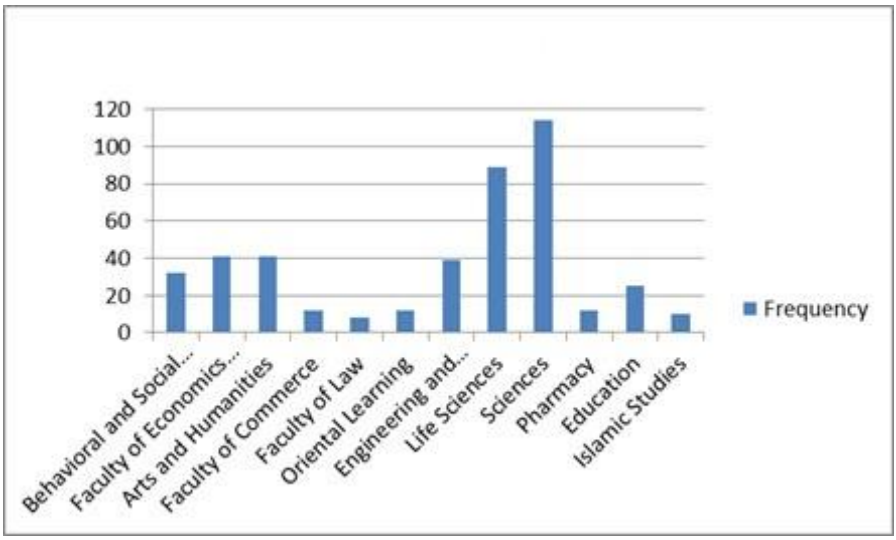

Figure 1. Bart Chart of Respondents' Disciplines

It is evident from Figure 1 that the highest number of respondents 114 (26 %) were from the discipline of 'Science' followed by 89 (20 %) from Life Sciences. The number of academic staff in these disciplines was higher than all other disciplines. Eight respondents were from the discipline of 'Law' and ten from the discipline of 'Islamic Studies'. All 12 disciplines of the University of the Punjab are represented. Figure 1 shows that there were more respondents from pure and applied sciences than the disciplines of Law and Islamic Studies. Out of 457 responses, 22 respondents did not mention their discipline.

Frequency of Published Journal Articles

The respondents were asked to provide information about the number of published journal articles. Figure 2 represents the frequency distribution of the published articles during last one year. Four hundred and thirty-seven respondents answered this question out of 457. Twenty respondents did not mention the number of articles published by them.

It reveals that a majority of the respondents (*n*=242; 55 %) published '1-10' journal articles in last one year while 140 (28 %) had not published even single journal article.

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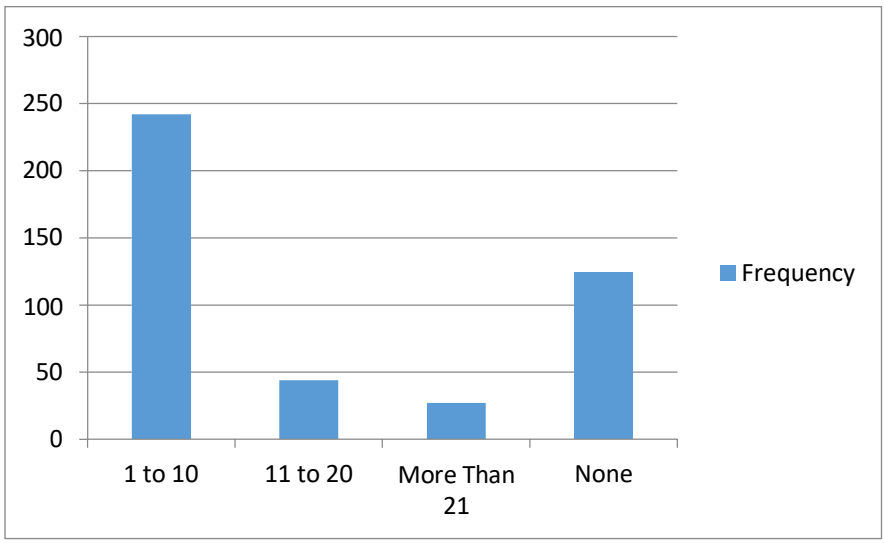

Figure 2. Bar Chart of Published Journal Articles

Frequency of Internet Use

Figure 3 shows that 159 (37 %) respondents had been using the Internet for 6 to 10 years ago. About 155 (36 %) respondents had been using the Internet for more than 10 years and only 3 respondents were still not using the Internet. Findings reveal that an overwhelming majority of the respondents were using the Internet for their teaching and research tasks.

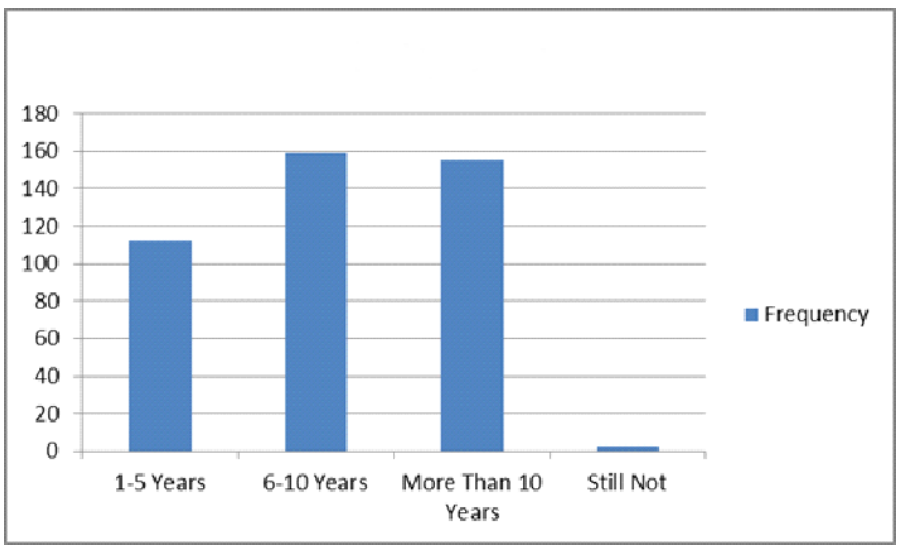

Figure 3. Bar Chart of Respondents' Internet Use

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E-literacy Skills

The University provides access to large full text databases of e-journals e.g., Emerald, Elsevier and JSTOR through HEC's National Digital Library Programme. The respondents were asked about their e-literacy skills. Table 2 shows their self-reported status of e-literacy skills. Analysis reveal that a vast majority of the respondents 381 (84 %) described having either good or excellent skills to find e-journal articles through 'General Search Engines'. A majority of the respondents 279 (62 %) exhibited either good or excellent skills regarding their familiarity with the full text databases of e-journals.

Table 2

Frequency Distribution of Respondents' E-literacy Skills

E-literacy Skills	Don't Know	Poor	Satisfactory	Good	Excellent	Median
1. Accessing e-journal articles through WWW quickly.	7 (1 %)	31 (7 %)	134 (30 %)	155 (35 %)	119 (27 %)	4
2. Awareness of search engines (e.g., Google, Google Scholar, Yahoo, …) to find E-journal articles.	1 (0 %)	9 (2 %)	61 (14 %)	168 (37 %)	213 (47 %)	4
3. Effective use of advanced searching techniques (Boolean Operators – AND, OR and NOT) to retrieve relevant articles.	63 (14 %)	91 (20 %)	145 (32 %)	90 (20 %)	62 (14 %)	3
4. Familiarity of full text databases of E-journals (e.g., Elsevier, JSTOR, Emerald…).	14 (3 %)	45 (10 %)	111 (25 %)	156 (35 %)	123 (27 %)	4
5. Evaluation of the quality of an e-journal	24 (5 %)	65 (15 %)	159 (36 %)	137 (31 %)	60 (13 %)	3

Scale: 1=Don't Know, 2=Poor, 3=Satisfactory, 4=Good, 5=Excellent

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However, it is evident from Table 2 that 32 % respondents showed satisfactory skills while 20 % exhibited 'Poor' skills regarding effective use of advanced searching techniques, which help in retrieving e- journal articles from full text databases efficiently by using 'Boolean Logic – AND, OR, and NOT'. A half of the respondents 224 (50 %) exhibited either poor or satisfactory skills and 197 (44 %) respondents either good or excellent skills regarding evaluation of the e-journals quality.

Gender differences in E-literacy skills. Mann-Whitney U Test was conducted to see whether any significant difference exists between male and female respondents in terms of their e-literacy skills. Kinnear and Gray (2008) stated that the "Mann-Whitney U Test is an alternative to the independent sample t-test. Most of the non-parametric methods use statistics, such as the median, that are resistant to outliers and skewness" (p.212). Exact significance values from Table 3 shows that there was no significant difference between male and female in terms of their e-literacy skills.

Table 3

Mann- Whitney U Test of Gender Differences to E-literacy Skills

E-literacy skills	Mean rank (Male)	Mean rank (Female)	Mann Whitney U Test	Exact (sig. 2 tailed)
Accessing e-journal articles through WWW quickly.	214.79	230.14	22747	.171
Awareness of search engines (e.g., Google, Google Scholar, Yahoo, …) to find E-journal articles.	223.96	216.64	23325	.530
Effective use of advanced searching techniques (Boolean Operators – AND, OR and NOT) to retrieve relevant articles.	221.35	216.36	23249	.666
Familiarity of full text databases of E-journals (e.g., Elsevier, JSTOR, Emerald…).	224.86	217.81	23577.5	.559
Evaluation of the quality of an e-journal	224.43	211.88	22326	.279

Frequency of E-journals' Use

The respondents were asked about the frequency of e-journals use on a five point Likert type scale. Figure 4 shows that a majority of them (*n*= 312; 69 %)

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used e-journals either frequently or very frequently. Only 58 (13 %) used e-journals either never or rarely.

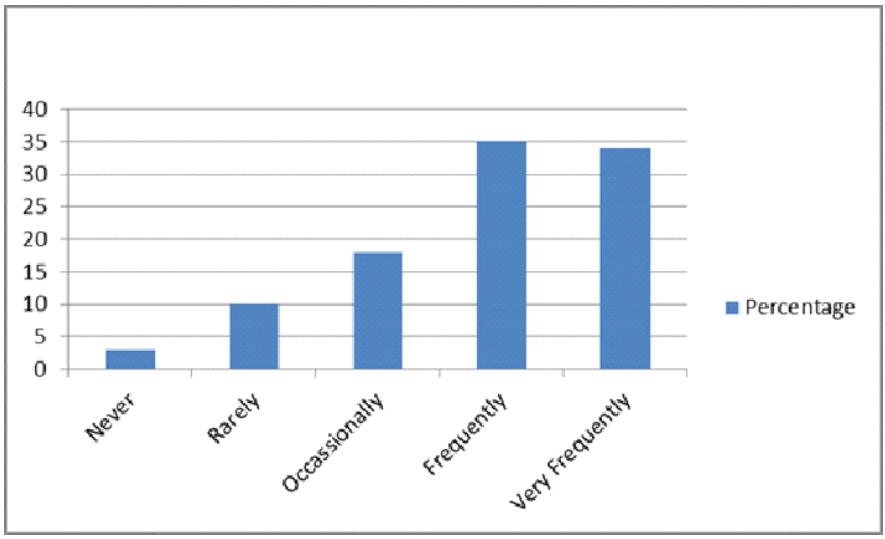

Figure 4. Respondents' Frequency of E-journals' Use

Frequency of E-journals' Use by Demographic and Profession Related Variables

Cross-tabulations were conducted between frequency of e-journals use, demographic and profession related variables. Healey (2013) stated that "if variables of interests are of different levels one nominal and other ordinal then to measure association between two variables, use association technique appropriate for lower level of measurement – nominal level in this case" (p.288). Correlation coefficient Cramer's V was measured to see association between frequency of e-journal's use and variables of nominal level – Journal articles published, Internet use, Discipline and Age.

E-journals' use and articles published. Correlation coefficient Cramer's V value (.173) from Table 4 shows association between these two variables. Significance value (p=.001) exhibited statistically highly significant relationship between the respondents' e-journals use and their articles published. It shows that the respondents publishing more journal articles will be more frequent users of e-journals.

E-journals' use and Internet use. It was assumed that the respondents using e-journals will also be using internet, therefore, relationship between e-journals' use and internet use was determined using correlation coefficient

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Cramer's V. Cramer's V value (.2) from Table 4 showed positive and moderate association between two variables of interest. The significance value (.000) showed highly significant association between the respondents' period of using internet and their frequency of e-journals use. It exhibits the fact that the respondents using internet for a long time tend to use e-journals more frequently.

Table 4

Cross-tabulation of Frequency of E-journals' use, Demographic and Profession Variables

Demographic and profession related variables	Frequency of e-journal's use	
	Cramer's V	Significance P
Articles published	.173	.001
Internet use	.2	.000
Discipline	.222	.000
Age	.151	.003

E-journals use and discipline. Table 5 exhibits positive relationship between the respondents' e-journals' use and their respective discipline (correlation coefficient Cramer's V value .222). Significance value (p = .000) exhibited highly significant relationship between the above two variables. The results of cross-tabulation (Table 5) reveal that the respondents' use of e-journals depends upon their respective discipline. The respondents from the disciplines of Life Sciences, Engineering and Technology and Law were found to be more frequent users of e-journals while the respondents from the disciplines of Islamic Studies and Arts and Humanities were found to be least frequent users of e-journals.

Table 5

Crosstabs of the Respondents' E-journal's Use by their Discipline

Disciplines	Never	Rarely	Occasionally	Frequently	Very frequently	N
Life Sciences	0 (0 %)	3 (3 %)	6 (7 %)	41 (46 %)	39 (44 %)	89 (100 %)
Sciences	3 (3 %)	12 (10 %)	19 (17 %)	44 (39 %)	36 (31 %)	114 (100 %)
Economics & Management Sci.	1 (2 %)	4 (10 %)	9 (22 %)	8 (20 %)	19 (46 %)	41 (100 %)

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Engineering & Technology	1 (3 %)	2 (5 %)	6 (16 %)	13 (34 %)	16 (42 %)	38 (100 %
Education	1 (4 %)	1 (4 %)	6 (24 %)	5 (20 %)	12 (48 %)	25 (100 %)
Behavioral & Social Sciences	0 (0 %)	2 (6 %)	7 (23 %)	12 (39 %)	10 (32 %)	31 (100 %)
Commerce	1 (8 %)	1 (8 %)	2 (17 %)	3 (25 %)	5 (42 %)	12 (100 %)
Pharmacy	0 (0 %)	1 (9 %)	3 (25 %)	4 (33 %)	4 (33 %)	12 (100 %)
Oriental Learning	1 (8 %)	2 (17 %)	3 (25 %)	2 (17 %)	4 (33 %)	12 (100 %)
Arts & Humanities	4 (10 %)	8 (20 %)	12 (30 %)	13 (33 %)	3 (7 %)	40 (100 %)
Law	0 (0 %)	1 (12 %)	1 (12 %)	5 (63 %)	1 (13 %)	8 (100 %)
Islamic Studies	0 (0 %)	5 (50 %)	3 (30 %)	1 (10 %)	1 (10 %)	10 (100 %)

Cramer's V = .222 Significance = .000

E-journals use and age. Cramer's V value (.151) shows association between the respondents' e-journals' use and their age. Significance value (.003) exhibit a significant relationship between the respondents' e-journals use and their age groups. It reveals that young respondents of age '23-33' and '33-44' were more likely frequent users of e-journals than the respondents of age above 44.

Relationship of E-journals use by E-literacy skills, Education and Academic Designation

Table 6 presents rank order correlation of the respondents' e-journals use and their e-literacy skills, education and academic designation. Therefore, correlation coefficient 'Kendall's tau b' was determined to explore any association between the respondents' e-journal's use, their e-literacy skills, education and academic designation. Kendall's tau statistics is a measure of association for ordered categories. Kinnear and Gray (2008) stated, "Kendall's tau statistics offers an alternative to the spearman rank correlation as measures of agreement between rankings, or assignment to ordered categories" (p. 392).

E-journals use and E-literacy skills. Kendall's tau-b value (.424) exhibits moderate relationship between the respondents' e-journals' use and their familiarity of full text databases – Emerald, Elsevier, JSTOR and others. Significance

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value (p=.000) shows highly significant relationship between e-journals' use and their familiarity with full-text databases.

Kendall' tau-b values (.290), (.329), (.328) and (.364) also reveal moderate relationships between the respondents' e-journals use and their 'Awareness of search engines', 'ability to access e-journal articles through WWW quickly', 'Use of advance searching techniques effectively' and their ability of 'Evaluation of the quality of an E-Journal'.

Significance values (p=.000) revealed statistically highly significant relationship between the respondents e-journals use and their e-literacy skills. It is evident from the above results that the respondents exhibiting good e-literacy skills are more frequent users of e-journals.

Table 6

Cross-tabulation of Frequency of E-journals' Use and E-literacy Skills and Demographic Variables

E-literacy skills and demographic variables	Frequency of e-journal's use	
	Kendall's tau b	Significance P
Familiarity of full text databases of e-journals	.424	.000
Accessing e-journal articles through WWW quickly.	.329	.000
Awareness of search engines to find e-journal articles.	.290	.000
Effective use of advanced searching techniques (Boolean Operators – AND, OR and NOT) to retrieve relevant articles.	.328	.000
Evaluation of the quality of an e-journal article	.364	.000
Education	.184	.000
Academic Designation	-0.082	.052

E-journal's use and academic designation. Correlation coefficient Kendall's tau b value -0.082 exhibits negative relationship between the respondents' e-journals' use and their academic designations. Significance value .052 shows no statistically significant relationship between two variables of interest. It reveals the

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fact that the respondents' frequency of e-journals' use is not dependent upon their academic designation.

E-journal's use and education level. Kendall's tau-b value (.184) shows positive association between the respondents' use of e-journals and their academic qualification. Significance value (p = .000) showed a highly significant association between these two variables. It reveals that the respondents with Ph.D. qualification were very frequent users of e-journals than the respondents with M.Phil and MA qualifications. The respondents with higher academic qualification (Ph.D.) might be more engaged in scholarly activities such as supervising researchers, writing research papers and funded research projects and consequently frequently using e-journals to fulfill their research needs.

E-journal's use and gender. Table 7 also shows coefficient of association Gamma between the respondents' gender and their frequency of e-journals' use. DeVaus (1995) mentioned "if one variable has only two categories we can ignore its level of measurement and let the other variable determine the choice of the co-efficient. For example, if a dichotomous nominal level variable (e.g. gender) is cross-tabulated with an ordinal level variable, we can treat them both as ordinal and select the appropriate statistic (gamma)".

Table 7

Respondents' E-journals Use by Gender

		Gender	
		Male	Female
E-journals' use	Never	7 (3 %)	5 (2 %)
	Rarely	24 (10 %)	18 (9 %)
	Occasionally	44 (19 %)	38 (18 %)
	Frequently	77 (33 %)	77 (37 %)
	Very Frequently	83 (35 %)	71 (34%)
	Total	235 (100 %)	209 (100 %)

Gamma = .017 Significance = .819

Gamma value (.017) shows a positive association between the respondents' gender and e-journals' use. The p value 0.819 reveals statistically no significant relationship between above these variables of interest. It exhibits the fact that the respondents' use of e-journals is not influenced by their gender.

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DISCUSSION

This study aimed to investigate the relationship of academic staff's frequency of e-journals use and demographic variables – age, gender, academic designation, education as well as profession related variables – internet use, e-literacy skills and research productivity. Relationship of respondents' frequency of e-journals use and demographic variables shows that e-journals' use is related to discipline and this finding is similar to those of previous research studies (Bar-Ilan, Peritz and Wolman, 2003; Brown, Lund and Walton, 2007; Dilek-Kayaoglu, 2008; Nicholas et al., 2011). These researchers noticed that use of e-journals and databases varied by subject as scientists make more frequent use of e-journals as compared to humanists. This study also exhibits that academic staff from the discipline of life sciences, engineering and technology and law are very frequent users of e-journals, while least frequent users are from the discipline of Islamic studies and arts and humanities. One possible reason of less use of e-journals from the discipline of 'Arts and Humanities' and Islamic studies may be that respondents from these disciplines might be using more print information sources than e-journals for their scholarly tasks (Tahir, Mahmood and Shafique, 2010).

The present study's depicts that use of e-journals is positively related to the respondents' age. Previous researchers also found that age is an explanatory factor in the use of e-journals. Young academic staff was more frequent users of e-journals than older academic staff (Borrego et al., 2007; Monopli et al., 2002; Smith, 2003; Tenopir et al., 2003). The reason may be that young academic staff is better in using contemporary technologies and found convenience in e-format of journals. They might be frequent users of e resources and consequently using more e-journals. The first researcher observed during data collection process that the older academic staff was reluctant to fill out the questionnaire on the use of e-journals.

The results indicate that e-journals' use was found related to educational level; academic staff with doctoral degree was more frequent users of e-journals than academic staff with 16 and 18 years (MA and 'M.Phil) education. The reason of more frequent use of e-journals by academic staff having Ph.D. qualification might be due to their extensive engagement in research activities such as writing articles, supervising research students and conferences. Academic staff's frequency of e-journals use was positively related to their research output. We can say that academic staff publishing more research papers is more frequently using e-journals. This finding is in accordance to studies (King et al., 2009; Nicholas, Rowlands, Huntington, Clark and Jamali, 2009; Tenopir et al. 2010), where researchers

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mentioned that the use of e-journals is strongly and positively correlated to quantity of the papers published, number of Ph.D.s produced and research grants achieved. Academic staff who publish more articles tend to read more articles.

It is interesting to note that previous research studies revealed that use of e-journals is dependent upon gender and male academic staff is more frequent users of e-journals than females (Monopli et al., 2002; Tenopir et al., 2003). However, in this study e-journals' use was not found significantly dependent upon gender. The reason may be that both male and female possess similar e-literacy skills in finding and locating e-journal and it is also evident from Table 3 that there exists no significant difference between male and female regarding their e-literacy skills. Academic staff's frequency of e-journals use was not found related to academic designation. Tenopir, Wilson, Vakkari, Talja and king (2010) also revealed that personal characteristic of the readers including age, academic status had much less influence on academic staff's reading patterns of e-articles.

CONCLUSION

Based on the findings, the study concludes that there is a difference in use frequency of e-journals among respondents from various disciplines, such as scientists make more frequent use of e journals as compared to humanists. Then, the academic staff with higher qualification is more frequent users of e-journals than the academic staff with 'MA' and 'M.Phil' qualification. An overwhelming majority of the e-journal users aged between 23-44 years are very frequent users of e-journals. However, gender and academic designation have no impact on academic staff e-journals use. Academic staff with long internet experience and better digital literacy skills are more frequently using e-journals. Academic staff publishing more journal articles are frequent users of e-journals.

IMPLICATIONS OF THE STUDY

The findings imply that there is a need to take into account academic staff's both professional and demographic characteristics – age, academic education, discipline, research articles published, internet use and e-literacy skills, while designing information services for academic staff. These demographic and profession related differences may affect attitudes towards e-journals usage. The findings suggest that information literacy and instruction programmes can be arranged for the disciplines of Engineering and Technology, Life Science and Law. Understanding impact of all these variables on e-journal's use may help information professionals while planning training programmes for researchers.

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REFRENCES

Bar-Ilan, J., Peritz, B. C., & Wolman, Y. (2003). A survey on the use of electronic databases and electronic journals accessed through the web by the academic staff of Israeli universities. *The Journal of Academic Librarianship*, *29*(6), 346-361. doi: http://dx.doi.org/10.1016/j.jal.2003.08.002

Bonthron, K., Urquhart, C., Thomas, R., Armstrong, C., Ellis, D., Everitt, J., . . . Yeoman, A. (2003). Trends in use of electronic journals in higher education in the UK-views of academic staff and students. *D-Lib Magazine, 9*(6), 16. doi: 10.1045/june2003-urquhart

Borrego, A., Anglada, L., Barrios, M., & Comellas, N. (2007). Use and users of electronic journals at Catalan universities: The results of a survey. *The Journal of Academic Librarianship*, *33*(1), 67-75. doi: http://dx.doi.org/10.1016/j.acalib. 2006.08.012

Bravo, B. R., & Díez, M. L. A. (2011). An analysis of the use of electronic journals in a Spanish academic context: Developments and profitability. *Serials Review*, *37*(3), 181-195. doi: 10.1080/00987913.2011.10765381

Brown, J., Lund, P., & Walton, G. (2007). *Use of e-journals by academic staff and researchers at Loughborough University*. Retrieved from Loughborough University Library website: https://www.lboro.ac.uk/media/wwwlboroacuk /content/library/downloads/surveyresults/ejournal_survey.pdf

Connaway, L. S., Dickey, T. J., & Radford, M. L. (2011). "If it is too inconvenient I'm not going after it:" Convenience as a critical factor in information-seeking behaviors. *Library & Information Science Research*, *33*(3), 179-190. doi: http://dx.doi.org/10.1016/j.lisr.2010.12.002

De Groote, S. L., & Dorsch, J. L. (2003). Measuring use patterns of online journals and databases. *Journal of the Medical Library Association*, *91*(2), 231 241. Retrieved from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC153164/

Dilek-Kayaoglu, H. (2008). Use of electronic journals by faculty at Istanbul University, Turkey: The results of a survey. *The Journal of Academic Librarianship*, *34*(3), 239-247. doi:10.1016/j.acalib.2008.03.007

De Vaus, D. (1995). *Surveys in social research*. 4th ed. London: Routledge.

Healey, J. (2013). *Statistics: A tool for social research*. Belmont, CA: Cengage Learning.

King, D. W., Tenopir, C., Choemprayong, S., & Wu, L. (2009). Scholarly journal information-seeking and reading patterns of faculty at five US Universities. *Learned Publishing*, *22*(2), 126-144. doi: 10.1087/2009208

Kinnear, P. R., & Gray, C. D. (2008). *SPSS 16 made simple*. New York: Psychology Press.

Monopoli, M., Nicholas, D., Georgiou, P., & Korfiati, M. (2002). A user-oriented evaluation of digital libraries: Case study the "electronic journals" service of the library and information service of the University of Patras, Greece. *Aslib Proceedings, 54*(2), 103-117. doi: http://dx.doi.org/10.1108/00012530210435239

Nicholas, D., Huntington, P., Jamali, H. R., & Watkinson, A. (2006). The information seeking behaviour of the users of digital scholarly journals. *Information Processing & Management*, *42*(5), 1345-1365. doi: http://dx.doi.org/10.1016/j.ipm.2006.02.001

Nicholas, D., Rowlands, I., Huntington, P., Clark, D., & Jamali, H. (2009). *E-journals: Their use, value and impact.* Retrieved from Research Information Network website: http://www.rin.ac.uk/system/files/attachments/E-journalsreport.pdf

Nicholas, D., Rowlands, I., Huntington, P., Jamali, H. R., & Hernández Salazar, P. (2010). Diversity in the e-journal use and information-seeking behaviour of UK researchers. *Journal of documentation*, *66*(3), 409-433. doi: http://dx.doi.org/10.1108/00220411011038476

Nicholas, D., Rowlands, I., Williams, P., Brown, D. and Clark, D. (2011). *E-journals: their use, value and impact Final Report*. Retrieved from Research Information Network Website: http://www.rin.ac.uk/system/files/attachments/Ejournals_ part_II_for_screen_0.pdf

Pullinger, D. (1999). Academics and the new information environment: the impact of local factors on use of electronic journals. *Journal of information science*, *25*(2), 164-172. doi: 10.1177/016555159902500207

Rowland, F., Bell, I., & Falconer, C. (1997). Human and economic factors affecting the acceptance of electronic journals by readers. *Canadian journal of communication*, *22*(3). Retrieved from: http://cjconline.ca/index.php/journal/article/viewArticle/1003/909

Rowlands, I., & Fieldhouse, M. (2007). *Information behaviour of the researcher of the future, Work Package I: Trends in Scholarly Information Behaviour.* London: JISC & British Library. Retrieved March, 21, 2012

Sato, Y., Mine, S., Itsumura, H., Tutiya, S., Koyama, K., Kurata, K., & Takeuchi, H. (2012). The changes in Japanese researchers' usage and perception of electronic resources: Result of SCREAL Survey 2011. *Proceedings of the*

American Society for Information Science and Technology, 49(1), 1-4. doi: 10.1002/meet.14504901356

Smith, E. T. (2003). Changes in faculty reading behaviors: The impact of electronic journals on the University of Georgia. *The Journal of Academic Librarianship, 29*(3), 162-168. doi: http://dx.doi.org/10.1016/S0099-1333(03)00018-1

Talja, S., & Maula, H. (2003). Reasons for the use and non-use of electronic journals and databases: A domain analytic study in four scholarly disciplines. *Journal of documentation*, *59*(6), 673-691. doi: http://dx.doi.org/10.1108/00220410310506312

Tenopir, C., Hitchcock, B., & Pillow, A. (2003). *Use and users of electronic library resources: An overview and analysis of recent research studies.* Retrieved from the Council on Library and Information Resources website: http://www.clir.org/pubs/reports/pub120/pub120.pdf

Tenopir, C., Wilson, C. S., Vakkari, P., Talja, S., & King, D. W. (2010). Cross country comparison of scholarly e-reading patterns in Australia, Finland, and the United States. *Australian Academic & Research Libraries*, *41*(1), 26-41. doi: 10.1080/00048623.2010.10721432

Termens, M. (2008). Looking below the surface: The use of electronic journals by the members of a library consortium. *Library Collections, Acquisitions, and Technical Services,32*(2), 76-85. doi: 10.1080/14649055.2008.10766198

Voorbij, H., & Ongering, H. (2006). The use of electronic journals by Dutch researchers: A descriptive and exploratory study. *The Journal of Academic Librarianship*, *32*(3), 223-237. doi: http://dx.doi.org/10.1016/j.acalib.2006.02.006