

*Full Length Research Paper*

# Extent of utilization and familiarity in accessing digital technologies among post-graduate and research scholars in Shiraz city

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The present study is aimed at assessing the extent of utilization and familiarity in accessing digital technologies of information among post graduate (PG) students in Shiraz city. A total of 97 respondents (31 PG students and 66 research scholars) were randomly selected from the city of Shiraz. A questionnaire measuring the usage of various digital technologies and the accessing of digital resources was prepared by the investigator and administered to the sample selected. Statistical methods like chi-square and contingency table analysis were used. Results revealed that in the extent of digital technologies usage, CD browsing usage was 40.2 of 50%, in internet searching it was 42.3 of 100%, telefax was sparingly used (about 86% to an extent less than 50%) and laser scanner rarely used ( about 83% less than 50%). Printers as digital technologies were used more often (74 of 75%), CD writer (about 65% to an extent of less than 50%), LCD pad/data projector was less (about 83% less than 50%), and online catalogue search (about 70% less than 50%). Research scholars used more of CD browsing, telefax, CD writers, LCD pad/data projectors, while students used more of printers. In familiarity with accessing digital sources, they were more familiar with internet journals and less familiarity was observed regarding internet encyclopedia, directories and yellow pages, and digital libraries. The selected sample were more familiar with book search and book shops on net, internet relay chatting and email and were less familiar with teleconferencing on the net. Research scholars had higher familiarity with book search and book shops on internet than students.

**Key words:** Information technology, utilization, familiarity, digital technologies, research scholars, post-graduate students.

## INTRODUCTION

The emergence of communication and information era in the contemporary world is due to the rapid growth and non-restrained bulk of information produced in the world. In this era, investments by organizations in the field of information technology have been remarkably high. By the same token, libraries also have not been exempted from the influences of information technology. The application of information technology in the libraries of Iran has brought about improvements in library efficiency and capability of providing services for users particularly in the field of higher education. The advancement in far-distance technology, Computer networks, and Internet has enabled us to get in touch with community information. Nowadays, in Iran, there are lot of reasons,

compared to the past, that necessitate the use of information technology in libraries and their automation. Information obtained on the net through a mere click satisfies the requirements of modern users. Now students are able to surf the net, browse art galleries, view first hand sources of documentaries in every field of study, and download information which was implausible some years ago.

Some of the studies indicated on the above issues are summarized as below. Douglas (1986) elaborated on Information technology which cost a million dollars in 1950 will be available in the year 2000 for ten dollars. Developments in software, while not as much noticed, have been at least as remarkable as developments in

computer hardware. The current and near-term realities related to computing hardware, communication technology, storage technology, software, and the human-computer interface are described and placed in context. Dugdale (2001) emphasizes the Internet contradiction facing these in higher education who are attempting to create equality of access to information, where nevertheless new aspects of inequality may be created. This may occur even when all members theoretically possess equal access to the same material. Fisher (1998) briefly reviews information's chequered history and critically analyzes electronic information sources with particular reference to social science CD-ROMs and the Internet. The content of such databases is not as geographically and culturally diverse as we are led to believe. This unequal and discriminatory supply of information, aided and abetted by increasing commoditization, is both the product of, and an influence of, the quality of academic research and teaching. Information professionals can take steps to mitigate information inequality. Stabler (1991), explains that end users of CD-ROM often need assistance in data base content, search protocols, and use of microcomputers. There is a necessity for a good training program which will develop a positive attitude, competency of staff, and consistency of service. He describes a model training program developed by New Mexico State University Library. By using a team approach of a subject specialist and the CD-ROM Coordinator, the staff can be trained quickly and efficiently. The training emphasizes data base content, software comparison and application, and basic knowledge of microcomputers. Jacobson and Newkirk (1996) reported the results of a study to determine the extent and ease of use of CD-ROM databases by Malaysian postgraduate students in Leeds, UK. Results showed that only 58.3% of the students used CD-ROM databases. The users found CD-ROM databases useful for these preparation, writing research papers, articles, and books.

Silva (1995) discusses the impact of Internet services and resources on medical research and teaching and also reviews the PERUSE Project at McGill University Libraries, Quebec Province, and the advent of virtual libraries. The CD-ROM database selected by McGill for its PERUSE Project was CD-PLUS, it was operated using its OVID search software which allowed access to a number of medical databases, such as MEDLINE, PsycINFO, and the H. W. Wilson databases. This allowed full integration with the Internet.

Developed countries for a long time have been paying a lot of attention to the growth and enhancement of information technology. Thus, advanced science could maintain its own place and significance all around the world. Developing countries like Iran, to some extent

have found out the importance and necessity of information technology and are attempting to focus attention on its betterment and development. Towards this end, a lot of digital technologies have been provided in Iranian universities and other institutes, but there is a need to study the extent of usage and familiarity in accessing those digital technologies.

## **Objectives of the study**

The objectives of this research are:

1. To determine the extent of utilization and familiarity in accessing digital technologies in the selected sample of Shiraz city.
2. To study the extent of utilization and familiarity in accessing digital technologies among post-graduate and research scholars in Shiraz city.

## **Hypotheses**

1. The selected sample differs significantly in their usage and familiarity in accessing digital technologies.
2. Post graduate students and research scholars differ significantly in their usage and familiarity in accessing digital technologies.

## **PROCEDURE**

The study covered a total of 97 sample respondents from Shiraz city of Iran. Of the 97 sample respondents, 31 were post graduate students and 66 were research scholars. They were selected through stratified random sampling technique. Informed consent was obtained from them and a prior permission was taken from their respective head of departments.

The questionnaire method was used to elicit data on the usage and familiarity in accessing digital technologies. A set of questions were formulated keeping in view, the need and objectives of the study. The questionnaires were personally distributed to 97 members who were selected randomly from the city of Shiraz. To find out the reliability of the questionnaire, Cronbach alpha was employed. The reliability of the questionnaire was found to be .7361, which was sufficiently high. Face validity and content validities have also been established for the questionnaire. Further, statistical methods like chi-square tests and contingency coefficient analysis were employed using SPSS for Windows (version 16.0).

## **RESULTS**

### **Usage of digital technologies**

Table 1 presents frequency and percent responses for the extent of usage of digital technologies among

**Table 1.** Frequency and percent responses for extent of usage of digital technologies among students and research scholars at Shiraz and results of test statistics.

Extent of use and familiarity (%)		Digital technologies											
		CD Browsing			Internet searching			Telefax			Laser scanner		
		PG	Ph D	Overall	PG	Ph D	Overall	PG	Ph D	Overall	PG	Ph D	Overall
25	F	7	4	11	-	-	-	21	33	54	16	20	36
	%	22.6	6.1	11.3	-	-	-	67.7	50.0	55.7	51.6	30.3	37.1
50	F	14	25	39	6	13	19	4	26	30	14	31	45
	%	45.2	37.9	40.2	19.4	19.7	19.6	12.9	39.4	30.9	45.2	47.0	46.4
75	F	2	18	20	15	22	37	6	1	7	1	12	13
	%	6.5	27.3	20.6	48.4	33.3	38.1	19.4	1.5	7.2	3.2	18.2	13.4
100	F	8	19	27	10	31	41	-	6	6	-	3	3
	%	25.8	28.8	27.8	32.3	47.0	42.3	-	9.1	6.2	-	4.5	3.1
TOTAL	F	31	66	97	31	66	97	31	66	97	31	66	97
	%	100	100	100	100	100	100	100	100	100	100	100	100
$\chi^2$ (OVERALL) CC (BET'N PG AND PH D)		$\chi^2 = 17.27$ ; P = 0.001 CC = 0.304; P = 0.020			$\chi^2 = 8.50$ ; P = 0.014 CC = 0.153; P = 0.311			$\chi^2 = 63.87$ ; P = 0.000 CC = 0.397; P = .000			$\chi^2 = 47.29$ ; P = 0.000 CC = 0.268; P = 0.057		

  

Extent of use and familiarity (%)		Printers			CD writer			LCD pad/data projector			Online catalogue search		
		PG	Ph D	Overall	PG	Ph D	Overall	PG	Ph D	Overall	PG	Ph D	Overall
25	F	3	6	9	10	13	23	21	26	47	10	17	27
	%	9.7	9.1	9.3	32.3	19.7	23.7	67.7	39.4	48.5	32.3	25.8	27.8
50	F	-	16	16	7	33	40	3	30	33	8	33	41
	%	-	24.2	16.5	22.6	50.0	41.2	9.7	45.5	34.0	25.8	50.0	42.3
75	F	16	20	36	9	7	16	7	6	13	9	9	18
	%	51.6	30.3	37.1	29.0	10.6	16.5	22.6	9.1	13.4	29.0	13.6	18.6
100	F	12	24	36	5	13	18	-	4	4	4	7	11
	%	38.7	36.4	37.1	16.1	19.7	18.6	-	6.1	4.1	12.9	10.6	11.3
TOTAL	F	31	66	97	31	66	97	31	66	97	31	66	97
	%	100	100	100	100	100	100	100	100	100	100	100	100
$\chi^2$ (OVERALL) CC (BET'N PG AND PH D)		$\chi^2 = 23.78$ ; P = 0.000 CC = 0.308; P = 0.017			$\chi^2 = 14.71$ ; P = 0.002 CC = 0.302; P = 0.021			$\chi^2 = 46.23$ ; P = 0.000 CC = 0.378; P = 0.001			$\chi^2 = 20.73$ ; P = 0.000 CC = 0.242; P = 0.110		

Note: F-frequency; %-percent; PG-Post graduate; Ph D-research scholar; X2 = chi-square; CC-Contingency coefficient.

students and research scholars at Shiraz. It provides results of chi-square tests of the overall comparisons and contingency coefficient analysis for association between students and research scholars.

### CD browsing

In using CD browsing, it was found that 40.2% of the total sample used it to an extent of 50%, followed by 27.8% to the extent of 100%, and 11.3% of them used it less (to an

extent of 25%). Chi-square test revealed a significant difference among groups of frequencies ( $\chi^2=17.27$ ; P=.001). When the usage of CD browsing was verified against students and research scholars, it was found that research scholars significantly (CC=.304; P=.020) used CD browsing to a higher extent than students.

### Internet searching

On the whole 42.3% of the sample indicated that they

use 100% internet, followed by 38.1% indicated to an extent of 75%, and the remaining 19.6% indicated its usage to an extent of 50%. Chi-square test revealed a significant difference among groups of frequencies ( $X^2=8.50$ ;  $P=.001$ ). However, there was no significant association ( $CC=.153$ ;  $P=.311$ ) between the extent of usage and groups.

### **Telefax**

It was observed that 55.7% of the sample used telefax to a smaller extent (25%), followed by 30.9% to an extent of 50%, and very few of them made use of telefax to the extent of 75% and 100% respectively. Chi-square test revealed a significant difference among groups of frequencies ( $X^2=63.87$ ;  $P=.000$ ). Further, students and research scholars varied significantly in their usage of telefax ( $CC=.397$ ;  $P=.000$ ), where we find that research scholars used more of telefax than students.

### **Laser scanner**

On the whole 46.4% of the sample indicated that they use 75% laser scanner, followed by 37.1% to an extent of 100%, 13.4% to an extent of 75% and the remaining 3.1% indicated the usage to an extent of 100%. Chi-square test revealed a significant difference among groups of frequencies ( $X^2=47.29$ ;  $P=.001$ ). However, there was no significant association ( $CC=.267$ ;  $P=.057$ ) between extent of usage and groups.

### **Printers**

with the use of printers, it was found that 37.1% of the total sample used to an extent of 100% and 75% respectively, followed by 16.5% to the extent of 50%, and 9.3% of them used less (to an extent of 25%). Chi-square test revealed a significant difference among groups of frequencies ( $X^2=23.78$ ;  $P=.001$ ). When the usage of printers was verified against students and research scholars, it was found that students significantly ( $CC=.304$ ;  $P=.020$ ) used it to a higher extent than research scholars.

### **CD writer**

It was observed that 41.2% of the sample used CD writer to an extent of 50%, followed by 23.7% to an extent of 25%, 18.6% used 100%, and the remaining 16.5% used to an extent of 75%. Chi-square test revealed a significant difference among groups of frequencies ( $X^2=14.71$ ;  $P=.002$ ). Further, students and research scholars varied significantly in their usage of CD writer

( $CC=.397$ ;  $P=.000$ ), it was discovered that research scholars used more of CD writers than students.

### **LCD pad/data projector**

On the whole 48.5% of the sample indicated that they use LCD pad/data projector to an extent of 25%, followed by 34% to an extent of 50%, 13.4% to an extent of 75% and the remaining 4.1% indicated the usage to an extent of 100%. Chi-square test revealed a significant difference among groups of frequencies ( $X^2=46.23$ ;  $P=.001$ ). Further, it was found that research scholars used more of LCD pad/data projector ( $CC=.378$ ;  $P=.001$ ) than students.

### **Online catalogue search**

It was observed that 42.3% of the sample used online catalogue search to an extent of 50%, followed by 27.8% to an extent of 25%, 18.6% of 75%, and the remaining 11.3% to an extent of 75%. Chi-square test revealed a significant difference among groups of frequencies ( $X^2=20.73$ ;  $P=.002$ ). However, there was no significant association ( $CC=.242$ ;  $P=.110$ ) between extent of usage and groups.

### **Familiarity in accessing digital resources**

Table 2 presents the frequency and percent responses of the extent of familiarity in accessing digital resources among students and research scholars at Shiraz and provides results of chi-square tests for overall comparisons and contingency coefficient analysis for association between students and research scholars

### **Journals on the internet**

It was observed that 41.2% were familiar with it to an extent of 75%, followed by 35.1% to an extent of 50%, 17.5% to an extent of 100% and the remaining 6.2% indicated their familiarity to an extent of only 25%. When chi-square test was applied to these frequencies of familiarity, a significant values was observed ( $X^2=30.05$ ;  $P=.000$ ). However, no differential responses were found for students and research scholars ( $CC=.162$ ;  $P=.453$ ).

### **Encyclopedia on net**

In this case it was found that 39.2% indicated interest to an extent of 50%, 28.9% indicated to an extent of 75%, 17.5% indicated to a lesser extent of 25% and the remaining 14.4% indicated 100% familiarity. When

**Table 2.** Frequency and percent responses for extent of familiarity in accessing of digital sources of information among students and research scholars at Shiraz and results of test statistics.

Extent of use and familiarity (%)	Access to digital sources of information												
	Journals on the internet			Encyclopedia on net			Directories and yellow pages			Digital libraries			
	PG	Ph D	Overall	PG	Ph D	Overall	PG	Ph D	Overall	PG	Ph D	Overall	
25	F	3	3	6	7	10	17	12	16	28	-	8	8
	%	9.7	4.5	6.2	22.6	15.2	17.5	38.7	24.2	28.9	-	12.1	8.2
50	F	8	26	34	15	23	38	12	20	32	19	29	48
	%	25.8	39.4	35.1	48.4	34.8	39.2	38.7	30.3	33.0	61.3	43.9	49.5
75	F	15	25	40	7	21	28	7	27	34	8	15	23
	%	48.4	37.9	41.2	22.6	31.8	28.9	22.6	40.9	35.1	25.8	22.7	23.7
100	F	5	12	17	2	12	14	-	3	3	4	14	18
	%	16.1	18.2	17.5	6.5	18.2	14.4	-	4.5	3.1	12.9	21.2	18.6
TOTAL	F	31	66	97	31	66	97	31	66	97	31	66	97
	%	100	100	100	100	100	100	100	100	100	100	100	100
$X^2$ (OVERALL)		$X^2 = 30.05$ ; $P = 0.000$			$X^2 = 14.88$ ; $P = 0.002$			$X^2 = 25.60$ ; $P = 0.000$			$X^2 = 35.83$ ; $P = 0.000$		
CC (BET'N PG AND PH D)		CC = 0.162; $P = 0.453$			CC = 0.206; $P = 0.232$			CC = 0.230; $P = 0.144$			CC = 0.240; $P = 0.116$		
Extent of use and familiarity (%)	Journals on the internet			Encyclopedia on net			Directories and yellow pages			Digital libraries			
	PG	Ph D	Overall	PG	Ph D	Overall	PG	Ph D	Overall	PG	Ph D	Overall	
25	F	3	3	6	7	10	17	12	16	28	-	8	8
	%	9.7	4.5	6.2	22.6	15.2	17.5	38.7	24.2	28.9	-	12.1	8.2
50	F	8	26	34	15	23	38	12	20	32	19	29	48
	%	25.8	39.4	35.1	48.4	34.8	39.2	38.7	30.3	33.0	61.3	43.9	49.5
75	F	15	25	40	7	21	28	7	27	34	8	15	23
	%	48.4	37.9	41.2	22.6	31.8	28.9	22.6	40.9	35.1	25.8	22.7	23.7
100	F	5	12	17	2	12	14	-	3	3	4	14	18
	%	16.1	18.2	17.5	6.5	18.2	14.4	-	4.5	3.1	12.9	21.2	18.6
TOTAL	F	31	66	97	31	66	97	31	66	97	31	66	97
	%	100	100	100	100	100	100	100	100	100	100	100	100
$X^2$ (OVERALL)		$X^2 = 17.27$ ; $P = 0.001$			$X^2 = 8.50$ ; $P = 0.014$			$X^2 = 63.87$ ; $P = 0.000$			$X^2 = 47.29$ ; $P = 0.000$		
CC (BET'N PG AND PH D)		CC = 0.304; $P = 0.020$			CC = 0.153; $P = 0.311$			CC = 0.397; $P = 0.000$			CC = 0.268; $P = 0.057$		

Note: F-frequency; %-percent; PG-Post graduate; Ph D-research scholar; X2 = chi-square; CC-Contingency coefficient.

chi-square test was applied to these frequencies of familiarity, a significant values was observed ( $X^2=14.88$ ;  $P=.002$ ). However, no differential responses were found for students and research scholars ( $CC=.206$ ;  $P=.232$ ).

### Directories and yellow pages

When frequencies of familiarities were verified, it was found that 35.1% indicated to an extent of 75%, 33.0% indicated to an extent of 50%, 28.9% to an extent of 25%,

and the remaining 3.1% indicated 100% familiarity. Chi-square test revealed a significant difference among groups of frequencies ( $X^2=25.60$ ;  $P=.000$ ). However, there was no significant association ( $CC=.230$ ;  $P=.144$ ) between extent of familiarity and groups.

### Digital libraries

It was observed that 49.5% were familiar with it to an extent of 50%, followed by 23.7% to an extent of 75%,

18.6% to an extent of 100% and the remaining 8.2% indicated their familiarity to an extent of only 25%. When chi-square test was applied to these frequencies of familiarity, a significant values was observed ( $X^2=35.83$ ;  $P=.000$ ). However, no differential responses were found for students and research scholars ( $CC=.240$ ;  $P=.116$ ).

### **Book search and book shops on net**

with regards to accessing book search and book shops on the net, it was found that on the whole, 43.3% indicated that they had 100% familiarity, followed by 30.9% to the extent of 30.9%, 21.6% of them indicated the familiarity to an extent of 21.6% and the remaining 4.1% to the extent of 25% only. Chi-square test revealed a significant difference among groups of frequencies ( $X^2=31.70$ ;  $P=.000$ ). Further, there was a significant association ( $CC=.349$ ;  $P=.004$ ) between the extent of familiarity and groups, where it was found that research scholars had higher levels of familiarity than students.

### **Tele-conference**

When frequencies of familiarities were verified for teleconferencing on the net, it was found that 36.1% indicated to an extent of 50%, 35.1% indicated to an extent of 25%, 19.6% to an extent of 75%, and the remaining 9.3% of indicated 100% familiarity. Chi-square test revealed a significant difference among groups of frequencies ( $X^2=19.41$ ;  $P=.002$ ). However, there was no significant association ( $CC=.236$ ;  $P=.126$ ) between extent of familiarity and groups.

### **Internet relay chatting**

It was observed that 39.2% were familiar with it to an extent of 100%, followed by 23.7% to an extent of 75%, 33.0% to an extent of 50% and the remaining 4.1% indicated the familiarity to an extent of only 25%. When chi-square test was applied to these frequencies of familiarity, a significant value was observed ( $X^2=27.25$ ;  $P=.000$ ). However, no differential responses were found for students and research scholars ( $CC=.167$ ;  $P=.428$ ).

### **Mail facility**

When frequencies of familiarities were verified for mail facilities, it was found that a majority of 63.9% indicated familiarity to an extent of 100%, 28.9% to an extent of 75%, 5.2% to an extent of 50%, and the remaining 2.1% indicated 25% familiarity. Chi-square test revealed a significant difference among groups of frequencies ( $X^2=95.04$ ;  $P=.000$ ). However, there was no significant association ( $CC=.190$ ;  $P=.303$ ) between extent of familiarity and groups.

## **DISCUSSION**

The major findings of the present study are:

1. In the extent of usage of digital technologies, CD browsing usage was 40.2% to an extent of 50%, in internet searching 42.3% was used to the extent of 100%, telefax was used very sparingly (about 86% to an extent of less than 50%), and laser scanner was seldom used (about 83% less than 50%).
2. Printers as digital technologies were used more (74% of 75%), CD writer (about 65% to an extent of less than 50%), LCD pad/data projector sparingly used (about 83% less than 50%), and online catalogue seldom used (about 70% less than 50%).
3. Research scholars used more of CD browsing, telefax, CD writers, LCD pad/data projectors, whereas students used more of printers.
4. In familiarity with accessing digital sources, 59% had familiarity more than 75% for journals on the internet, about 57% where familiar with internet encyclopedia to an extent of less than 50%. There was less familiarity with directories and yellow pages (about 62% to an extent of less than 50%), and digital libraries (58% to an extent of less than 50%).
5. The selected sample had more familiarity with book search and book shops on net (about 65% to an extent of more than 75%), internet relay chatting (63% to an extent of more than 75%) and email (about 82% to an extent of more than 75%) and less of teleconferencing on the net (about 71% to an extent of less than 50%).
6. Research scholars had higher familiarity with book search and book shops on internet than students.

User satisfaction especially for users of higher education levels is an unavoidable necessity. Information technology has a very close link with the community of users. It is very important for libraries and educational centers, therefore, the importance of libraries, especially university libraries, lies in providing services and seeking user contentment.

In the present study 2, hypotheses were formulated of which hypotheses 1 was accepted for both usage and familiarity in accessing digital technologies as most of the chi-square tests showed significant differences. However, hypotheses 2 is accepted for very few factors and rejected for most of the factors as very few contingency coefficient analyses showed significant associations.

## **RECOMMENDATIONS**

Based on the findings of the study, the following suggestions are put forward to improve the use of the internet and electronic resources among the students and research scholars:

1. Compulsory section on usage and familiarity with latest

digital technologies should be included in the curriculum.

2. There should be complete campus-wide networking (Wi-Fi) where the Internet browsing facility is connected to university libraries in Iran.

3. The universities in Iran (both government and private) should subscribe to more e-journals and -databases.

4. Some orientation training programmers should be organized by the universities for students, research scholars and teachers at regular intervals so that the users can maximize and improve their excellence or proficiency in the use of the Internet for academic purposes.

## CONCLUSION

The use of the digital technologies is an evolving phenomenon at this stage. Their use in the Iranian Universities under study is still in a state of infancy or early maturation. We can very well visualize a situation where all users will have achieved near perfection in the use of and full dependency on the digital technologies for their information needs. So still there is a vast scope of future research in different types of users' behaviour and comparison of users' behaviour towards the use and familiarity towards digital technologies.

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