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IMPACT OF TECHNOLOGY ON INFORMATION SEEKING BEHAVIOUR OF DIGITAL IMMIGRANTS: A COMPARATIVE STUDY OF SENIOR ACADEMICIANS IN J&K

Ashaq Hussain Wafaye*

**Central Library, Govt. Medical College, Srinagar, Jammu & Kashmir, India. Email: ahwmlisku@gmail.com*

Abstract *The present paper examines the impact of technology on information seeking behaviour of "digital immigrants" (professors) of select universities. The main objective of the study was to know the web retrieval tools used by professors as well as knowing the resources preferred by senior academicians. The study also draws light on performance of web retrieval tools. The result shows that professors are making good use of technology besides having adequate know-how of web retrieval tools. It is also observed that more of web tools and resources could have been exploited if they (professors) were provided with trainings and facilities.*

Keywords: *Digital Immigrants, Professors, Impact, WebRetrieval Tools, Information Seeking, Web Resources, ICT, Senior Academicians, Performance, J&K*

Introduction

In present electronic age, it is literally impossible for academicians and researchers to carry out their pursuits without embracing Information and Communication Technologies (ICT). The ICT has brought a revolution in the information scenario with the result it becomes convenient and effortless for information seekers to satisfy their information needs. They greatly depend upon the innovative electronic tools for accessing web resources. It has shifted the paradigm in the information era. The transition in information services, from print to electronic, has come about very quickly, and libraries and information canters have undergone significant transformation in order to effectively deliver electronic resources to the academic community (Appleton, 2006). The arrival of electronic information resources has greatly affected the way a user seeks, acquires and then uses information. Today, users have adopted it because of quick, easy access and easy retrieval.

User is the focal point in an information system without which the information system loses its purpose. In the library setup, it is highly important to ascertain the kind of information required by the user; the ways and means employed for searching information; flow of information and the relationship of the user with the information system. Hence, it is essential to know the information needs of the users and how those needs can be satisfied. If users are not using library services, it is probably because that they are not being taken enough care. It is only recently that emphasis on the user has been laid. This becomes very imperative for libraries and information centres to categorise different user groups on the basis of their know-how of ICT, besides other parameters which they usually take care of, so that adequate attention can be given to groups which are lagging behind in this race of ICT.One of the important groups which have been identified is "digital immigrant" as the user of web is an individual who was born before the evolution of digital technology and adopted it to some extent later in their life (Prensky, 2001).

Literature Review

Daugherty and Funke (1998) investigated perspectives of university faculty and students currently involved in web-based instruction. Faculty members were surveyed on the advantages, disadvantages, and general effectiveness of using the Internet as a teaching and learning tool. Findings revealed that faculty encountered a wide range of challenges in the development and delivery of web-based instruction. The most frequently identified barriers included: lack of technical support, lack of software/adequate equipment, lack of faculty/administrative support, etc. Singer, Hall and Upton (2000) conducted a similar study on faculty concerns and developmental use of web-based course tools. Questionnaire

was distributed to 928 faculty members, yielding a response rate of 37%. Results revealed a need for staff development not only in the technical areas of the Web-based tools, but also in other relevant areas. There is a need to provide faculty with organisational incentives and other support, and to acknowledge cultural traditions of education, to help them overcome conflicting feelings about technology. In another study, Xu and Meyer (2007) investigated factors related to technology use in teaching by university faculty at doctoral and research institutions selected from the National Study of Postsecondary Faculty (NSOPF). Results revealed that age and Internet access were important factors related to faculty technology use. The relationship between email and web use to teaching productivity in particular is interesting and may indicate that productive faculty use technology to help them be more productive.

Jones and Johnson-Yale (2005) conducted a nationwide survey of Internet use by U.S. college faculty. The study was intended to know the impact of internet on faculty-student interactions, and faculty perceptions about Internet use by students. The findings of the study revealed that Internet is helping to overcome some of the traditional obstacles in university teaching, but virtual communication has its limits, and the Internet is likely to remain a supplemental tool rather than a substitute. But the advantages of some of these ICTs may be limited to venues like online-courses, which are still a small percentage of college courses overall. In a similar study, Patitungkho and Deshpande (2005) try to know information seeking behaviour of faculty members from seven faculties of Rajabhat Universities in Bangkok, Thailand. Results showed that Internet has been used extensively. It is found that Google.com, e-mail are more frequently used for learning and communication. It is also seen that 42.0% of respondents use the ERIC (Education Resources Information Centre) database for their information needs. Trentin (2006) worked on a project related to training faculty in the use of ICT for university teaching and revealed that technology-enhanced learning (TEL) methodologies are becoming an important part of university teaching but faculty members have tended to shy away from using them. The effectiveness of the method may be confirmed by the large number of faculty members continuing to use ICT to support their teaching despite having no specific university TEL projects.George and Olson (2008) conducted a study to examine how faculty 'technology literacy' and 'technology training' impact their pedagogy on faculty members in the US colleges of education among the 15peer institutions of the University of North Dakota. The results of the study showed significant correlations between technology literacy and pedagogical practice integration. The results revealed that faculty technology training may be maximised as nearly 70.0% of faculty responded that it was the universities' responsibility to train faculty, only 35.0% responded that it was faculty's sole responsibility to learn to use technology. The most important factor for faculty in the training process was regarding trainer quality (63.0%) which is a clear hint that faculty have taken technology literacy seriously. Herring (2001) conducted a survey in order to explore faculty members' satisfaction toward the web as a research source. Results revealed that, although faculty members are generally satisfied with the web, they question the accuracy and reliability of much web-based information and the sufficiency of web resources for research. However, despite a growing body of literature on educational use of the web, scholarly research on faculty attitudes toward the web as a research tool appears to be nonexistent.

Statement of the Problem

The increasing reliance of all forms of users on the electronic information resources in order to carry out their day to day work whether academic or administrative has increased manifold and has lead to importance of knowing the behaviour of one important category of information seeker and beneficiary known as 'Digital Immigrants' who in their later part of life experienced ICT. This raises the question of usage, accessibility and retrieval of web resources by the digital immigrants. Thus the present study made an endeavour to find out impact of web on digital immigrants and to understand their technological know-how.

Scope

The study undertaken was limited to the senior academicians falling under "digital immigrant" category and belonging to the prominent academic and research institutions of J&K.

Objective

The main objective of the study was to know the web retrieval tools used by professors as well as knowing the resources preferred by senior academicians. The study also draws light on performance of web retrieval tools.

Hypothesis

In the light of the above mentioned objective, the below mentioned null hypothesis was framed:

H0= No significant difference is present between users' viewpoints related to technological know-how.

Methodology

1. **Selection of Academic and Research Institutions:** The universities which were taken for study include University of Jammu (JU), University of Kashmir (KU), Sher-i-Kashmir University of Agricultural

Science & Technology- Jammu (SKUAST-J), and Sher-i-Kashmir University of Agricultural Science & Technology- Kashmir (SKUAST-K).

2. **Selection of the Population for the Study:** Professors from all the departments were selected in order to obtain the data for research.
3. **Sampling using Software:** Total population of the study was 225. In order to make study manageable, sampling was done and a sample size of 42.65% professors was selected for conducting research.
4. **Coverage of Professors in Different Institutions:** It was found that the total number of professors in the University of Jammu was 89 and we took 42.6% of them meaning 38 professors. Questionnaires were administered to those professors only whose number appeared in the list of random numbers. Similar procedures were followed with the other three select universities. In this way 32 (42.6%) out of 75 professors were selected in the University of Kashmir, 14 (42.4%) out of 33 professors were selected in the Sher-i-Kashmir University of Agricultural Science & Technology- Jammu (SKUAST-J) and 12 (42.8%) out of 28 professors were selected in the Sher-i-Kashmir University of Agricultural Science & Technology-Kashmir (SKUAST-K) for study.
5. **Methods Employed:** In order to achieve the above laid objectives a structured questionnaire with some open ended questions was used for the collection of data.
6. **Response of the Questionnaires from Professors:** A total of 96 questionnaires were administered to professors of four select academic and research institutions of J&K. 80 questionnaires were received duly filled in, making response of 83.33%. Researcher also interacted with many professors in order to understand perceptions regarding the utility of web.
7. **Testing of Hypothesis:** In order to test hypotheses Z Test was applied. The parameters of the test are discussed as under: Z Test Calculator for Two (2) Population Proportions is used when you want to know whether two populations or groups differ significantly on some single (categorical) characteristic.

Analysis & Discussion

Web Resources & Information Retrieval Tools: Know-How

Among the select universities, it is observed that majority of the senior academicians handle the web retrieval tools 'on their own' (80.0%), while 12.50% take the help of 'students' and approach 'experts' (07.50%). This clearly reveals that majority of senior academicians have taken know-how of web resources seriously which is not only positive for them but also for overall system of education. In the SKUAST-K majority of senior academicians is accessing web retrieval tools 'on their own' (90.90%) followed by SKUAST-J (83.33%). In the University of Kashmir 84.0% are handling these tools 'on their own' while at University of Jammu 71.87% are seen handling web retrieval tools 'on their own'. Hence, it is safely concluded that majority of senior academicians are handling web retrieval tools 'on their own' which is a good sign as the technocrats can make senior academicians understand other advanced things associated with ICT (Table 1).

Web Retrieval Tools used by Senior Academicians

Across all the select universities, majority of them use 'search engines' (83.75%), followed by 'Subject Directories' (23.75%) and 'Gateways' (22.5%), while 'Special Search Engines' (8.75%) and 'Meta Search Engines' (3.75%) are least known and preferred. It is clear that majority of senior academicians from University of Jammu are using 'Search Engines' (84.37%), 25.0% make use of 'Subject Directories', 15.63% using 'Gateways', 3.13% are using 'Meta Search Engines' and 3.13% are using 'Special Search Engines'. Majority of senior academicians from University of Kashmir are using 'Search Engines' (80.0%),

Table 1: Web resources & Information retrieval tools: Know-How

S. No.	Handling of Web resources	University of Jammu	SKUAST-J	University of Kashmir	SKUAST-K	Aggregate
		n=32	n=12	n=25	n=11	n=80
1	On my own	23 (71.87)	10 (83.33)	21 (84.0)	10 (90.90)	64 (80.0)
2	With expert help (Technologist)	2 (06.25)	1 (08.33)	2 (08.0)	1 (9.09)	6 (07.50)
3	With the help of Students	7 (21.87)	1 (08.33)	2 (08.0)	-	10 (12.50)

Figures in parentheses indicate percentage

Table 2: Web Retrieval Tools used by Senior Academicians

S.No.	Use of Web tools	University of Jammu	SKUAST-J	University of Kashmir	SKUAST-K	Aggregate
		n=32	n=12	n=25	n=11	n=80
1	Search Engines	27 (84.37)	10(83.33)	20 (80.0)	10 (90.90)	67 (83.75)
2	Meta Search Engines	1 (03.13)	-	2 (08.0)	-	3 (03.75)
3	Subject Directories	8 (25.0)	2 (16.66)	5 (20.0)	4 (36.36)	19 (23.75)
4	Gateways	5 (15.63)	-	10 (40.0)	3 (27.27)	18 (22.5)
5	Special Search Engine	1 (03.13)	1 (08.33)	5 (20.0)	-	7 (08.75)
6	Other	1 (3.13)	-	-	1 (9.09)	2 (02.5)

Figures in parentheses indicate percentage

40.0% 'Gateways', 20.0% 'Subject Directories', 8.33% 'Special Search Engines' and 8.0% are using 'Meta Search Engines'. In case of SKUAST-J 83.33% are using 'Search Engines', 16.66% 'Subject Directories' and 8.33% 'Special Search Engines', whereas at SKUAST-K majority are seen make use of 'Search Engines' (90.9%) and 36.36% 'Subject Directories' and 27.27% 'Gateways' for retrieving information. It is concluded that senior academicians are widely using 'search engines' the reason may be modest awareness about e-resources (Table 2).

Web Resources-Use by Professors in Different Institutions

Knowing the usage of different kinds of web resources it is found that majority of senior academicians from University of Jammu are using 'E-Books' (78.13%) followed by 'E-Journals' (71.87%) whereas 'Blogs' (12.50%) and 'Video Sharing Portals' (09.37%) are least preferred. At University of Kashmir respondents mostly make use of 'E-Books' (84.0%) followed by 'E-Journals' (76.0%) whereas, 'Blogs' (16.0%) and 'Video Sharing Portals' (16.0%) are least preferred. In SKUAST-J respondents mostly use 'E-Journals' (83.33%) followed by 'Online Newspapers' (58.33%) whereas 'Blogs' (16.66%) and 'Video Sharing Portals' (8.33%) are least preferred. While at SKUAST-K 100% respondents make use of 'E-Journals' followed by 'E-Books' (63.33%) again 'Blogs' (16.0%) and 'Video Sharing Portals' (09.09%) are least used. It is ascertained that senior academicians are majorly using e-books and e-journals when web is offering so many and more e-resources of vital significance as such they need to attain knowledge about those e-resources for finest use (Table 3).

Table 3: Web Resources-Use by Professors in Different Institutions

S.No.	Use	University of Jammu	SKUAST-J	University of Kashmir	SKUAST-K	Aggregate
		n=32	n=12	n=25	n=11	n=80
1	E-Books	25 (78.13)	5 (41.66)	21 (84.0)	7 (63.63)	58 (72.50)
2	E-Journals	23 (71.87)	10 (83.33)	19 (76.0)	11 (100)	63 (78.75)
3	Online Newspapers	13 (40.63)	7 (58.33)	12 (48.0)	5 (45.45)	37 (46.25)
4	Electronic Thesis & Dissertations	17 (53.13)	4 (33.33)	8 (32.0)	4 (36.36)	33 (41.25)
5	Wikis	13 (40.63)	4 (33.33)	11 (44.0)	4 (36.36)	32 (40.0)
6	Blogs	4 (12.50)	2 (16.66)	4 (16.0)	1 (09.09)	11 (13.75)
7	Digital Libraries	12 (37.50)	3 (25.0)	8 (32.0)	3 (27.27)	26 (32.50)
8	Video Sharing Portal	3 (09.37)	1 (08.33)	4 (16.0)	1 (09.09)	9 (11.25)

Figures in parentheses indicate percentage

Table 4: Web Retrieval Tools- Performance

S.No.	Rating	University of Jammu	SKUAST-J	University of Kashmir	SKUAST-K	Aggregate
		n=32	n=12	n=25	n=11	n=80
1	Excellent	2 (06.25)	1 (08.33)	5 (20.0)	1 (09.09)	9 (11.25)
2	Very good	12 (57.03)	6 (50.0)	8 (32.0)	5 (45.45)	31 (38.75)
3	Good	17 (53.13)	5 (41.66)	10 (40.0)	4 (36.36)	36 (45.0)
4	Average	1 (03.13)	-	2 (08.0)	1 (09.09)	4 (05.0)
5	Poor	-	-	-	-	0

Figures in parentheses indicate percentage

Web Retrieval Tools-Performance

When the respondents were asked to rate the "functionality" of web retrieval system, majority of them rated it 'Good' (45.0%), followed by 'Very Good' (38.75%) and 'Excellent' (11.25%). None of them have tagged functionality 'poor'. At University of Jammu senior academicians mostly deemed functionality of web retrieval tools as 'very good' (57.03%) followed by 'good' (53.13%) and 'excellent' (06.25%). However at University of Kashmir senior academicians mostly consider functionality of web as 'good' (40.0%) followed by 'very good' (32.0%) and 'excellent' (20.0%). At SKUAST-J senior academicians rated the functionality of web as 'very good' (50.0%) followed by 'good' (41.66%) and just 08.33% 'excellent', whereas in SKUAST-K senior academicians rank over all functionality of web as 'very good' (45.45%) followed by 'good' (36.36%) and just 09.09% 'excellent'. It is evident that majority is not rating web as 'excellent' as such it clearly indicates that there is need to learn more about web services for improvement higher education of the state (Table 4).

Testing & Verification of Hypothesis

In order to test hypotheses Z Test was applied. The parameters of the test are discussed as under: Z Test Calculator for 2 Population Proportions is used when you want to know whether two populations or groups differ significantly on some single (categorical) characteristic.

Null Hypothesis

H0: p1 - p2 = 0, where p1 is the proportion from the first population and p2 the proportion from the second.

As above, the null hypothesis tends to be that there is no difference between the two population proportions; or, more formally, that the difference is zero.

The Test statistics used is Z=

$$\frac{(\bar{p}_1 - \bar{p}_2) - 0}{\sqrt{\bar{p}(1-\bar{p})\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

'P' value less than 0.05 is considered significant.

H0= No significant difference is present between users' viewpoints related to technological know-how

Observations from Table 5 using Z-Test

In order to ascertain whether there was any significant difference in "handling of computer system" among different universities two sample proportion difference test was used at 5% level of significance. The 'p' value less than 0.05 was considered significant. The 'z' value along with its respective 'p' value is presented in Table 5. The test was employed for all possible combination of universities. The

Table 5: Web resources & Information Retrieval Tools: Know-How

University	ON MY OWN Table 1:		EXPERT HELP		HELP OF STUDENTS	
	Z	P-VALUE	Z	P-VALUE	Z	P-VALUE
JU Vs SKUAST-J	0.67	0.49	-0.24	0.81	1.03	0.29
JU Vs KU	-0.18	0.85	-0.25	0.79	1.42	0.15
JU Vs SKUAST-K	-0.02	0.97	-0.31	0.74	1.69	0.08
SKUAST-J Vs KU	-0.79	0.42	0.03	0.97	0.03	0.97
SKUAST-J Vs SKUAST-K	-0.53	0.58	-0.06	0.95	0.97	0.32
KU Vs SKUAST-K	0.10	0.91	-0.10	0.91	0.96	0.33

table reveals that the JU does not differ significantly in case of handling computer "on their own" with SKUAST-J and KU but JU differ significantly with that of SKUAST-K as far as handling computer system is concerned (z=0.67, p=0.49; z=-0.18, p=0.85; z=-0.02, p=0.97). The SKUAST-J was compared with that of KU and SKUAST-K in that case the two universities were not found significantly indifferent (z=-0.79, p=0.42; z=-0.53, p=0.58), when KU was compared with that of SKUAST-K, it was found that there is not any significant difference (z=0.10, p=0.91) suggesting that the KU does not differ with SKUAST-K in case of awareness about the web is concerned.

All the universities were compared with each other to assess whether there was any significant difference in handling computer system with an expert help. Table indicates there is not any significant difference in any of the comparison of the universities ('p' values greater than 0.05). This is clear indication that there is no significant difference in %ages of senior academicians regarding handling computer system by an expert.

All the universities were compared with each to assess whether there was any significant difference in handling computer system with the help of student. Table shows that there is no significant difference in any of the universities compared with each other as 'p' values are greater than 0.05 which indicates that there is no significant difference in %ages of senior academicians which are taking help from their students regarding computer use.

- **Hypothesis H0** regarding the technological know-how by senior academicians is similar in different institutions, thereby accepted baring JU Vs SKUAST-K.

Results

It is found that majority of senior academicians (80.0%) are able to handle web tools and resources but, still there are some senior academicians who need assistance from an expert (07.50%) or students (12.50%) to facilitate their teaching-learning from web. The analysis of data indicate that majority of senior academicians are using search engines (83.75%) followed by subject directories (23.75%). Web retrieval tools like gateways (22.5%), special search engines (08.75%), and meta search engine (03.75%) are barely employed by Professors. It is revealed that majority of the senior academicians are seen extensively using e-books (72.5%) and e-journals (78.75%), whereas, 46.25% are using online newspapers and 41.25% are using ETDs. It is found that other information resources that are scattered on web are less utilised viz blogs (13.75%), video sharing portals (11.25%). Itis also found that majority of senior academicians (45.0%) place web in good rank and just (11.25%) rated it excellent as far as performance of system is concerned.

Conclusion

With the advent of web and development of various web sources information seeking behaviour of senior academicians has changed. Users make more use of web resources with every passing day in order to fulfil information needs. Senior academicians generally need to know everything relevant to their field of interest as web is seen catering effective and efficient means to stay current.The results of the study reveal that the availability of electronic resources has a great impact on the information-seeking behaviour of the senior academicians.

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