The Impact of Non-Accessible Library and Information Science Journals on Research Productivity in Pakistan

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The purpose of this paper is to identify: (a) Non-accessible library and information science journals from HEC National Digital Library (DL) Subscribed databases, (b) Approaches adopted by the LIS researchers to acquire non-accessible articles, and (c) The impact of non-accessible articles on their research endeavor. A sequential exploratory strategy of mixed method research was applied to identify the impact of non-accessible LIS journals on research. This study was completed in two phases. In the first phase, an online surfing of all HEC subscribed databases was conducted and a list of openly accessible, partially accessible and non-accessible LIS journals was prepared. Impact factor of journals was checked from the list of Journal Citation Report by Thomson Reuter, 2013. In the second phase, a structured questionnaire was prepared to identify the approaches adopted by the researchers to acquire non-accessible articles and their impact on research productivity. Findings of the study show that (a) Emerald, (b) Science Direct, (c) JSTOR, (d) Project Muse, (e) Taylor & Francis, (f) Wiley-Blackwell Journals, and (g) University of Chicago Press, are the HEC subscribed databases which have LIS journals. Study reveals that there are 18 % non-accessible and 37 % partially accessible LIS journals on the HEC subscribed databases. Researchers tried to acquire non-accessible articles through friends, social networking sites (SNS) Groups, BDD and by requesting to authors etc. Respondents agreed that non-accessible journals do impact on research productivity. As a result, citations of non-accessible articles decreases, which negatively impact the quality and quantity of both authors and researchers' work. The outcomes of this study are significant for LIS researchers to become aware of the current situation of non-accessible journals and its impact on their research endeavors. It will also guide

the HEC and research institutions to redesign their policy for the subscription of relevant databases that will enable complete access to journals on LIS discipline. It will also help to increase the quality of researchers' work and citation rate of authors' articles. This study may then be replicated in other fields and countries also. There is not enough work analyzing the impact of non-accessible journals on research productivity.

Keywords: Non-accessible journals; LIS journals; Impact on research; HEC National Digital Library of Pakistan; Services used to access articles.

INTRODUCTION

Freely available articles are very frequently cited and the online availability of research articles offers substantial benefit to science and society (Lawrence, 2001). Different researchers have made efforts to investigate the phenomena whether online availability of research articles enhances their citations. Craig, Plume, McVeigh, Pringle, and Amin (2007) found a relationship between free online accessibility and citation of articles. Similarly, Norris, Oppenheim, and Rowland (2008a) concluded that online, freely accessible articles were highly and repeatedly cited. Antelman (2004) observed that the citation impact of freely available articles on ISI Web of Science databases has increased. It is now common assertion that online access has improved both readership and citations of research articles. Scholars in diverse disciplines are adopting open access practices and are rewarded well for it in the form of impact factor (IF) and quality of research.

There are three factors involved in the dissemination of research articles, (a) authors, (b) publishers, and (c) researchers. It is assumed that authors of the articles want maximum citation of their research work and they post their articles on the personal or institutional groups' sites and mail their articles on request to increase their citation ratio. Publishers want marketing of their published contents and provide them on payment, whereas researchers, who intend to write articles, want maximum access to the articles free of charge. This problem has been under discussion since the last two decades without finding any reasonable solution. Lawrence & Antelman's studies could not convince publishers because they were still reluctant to provide openly accessible articles. Publishers provide online access to articles through payment because of their publishing costs.

The access to articles differs in developed and developing countries because the subscription of journals in developing countries is the major financial constraint as compared to the developed countries. Chigbu, Njoku, Uzoagba and Thomsett-

Scott (2016) found that academic libraries due to financial constraints have limited access to AGORA, HINARI, OARE and EBSCOHOST databases to download material for their readers through library websites.

Availability of research material increases knowledge of the individuals that in turn helps in the production of good quality research work. The study of Chan, Kirsop, Costa, and Arunachalam (2005) showed that only 2.5% research publications are produced in the developing countries, hence, the availability of online journals varies from discipline to discipline, institution to institution and country to country. Chan (2004) also claimed that even the richest university library could not manage to subscribe to a greater part of the journals for its academic and research needs.

LITERATURE REVIEW

In this section, the picture of literature addressing openly accessible and non-accessible material impacting research has been presented. Lawrence (2001) analyzed 119,924 conference articles from DataBase systems and Logic Programming (DBLP) (dblp.uni-trier.de) in the computer science and related disciplines. He measured citation count on the basis of online availability by using research index and analysis excluding self-citations. The results presented that openly accessible articles in different disciplines were more commonly cited than the non-openly accessible ones. Chan (2004) identified that only 1100 articles were open accessible (www.doaj.org) among 23,000 peer-reviewed titles listed by Ulrich (http://www.ulrichsweb.com/ulrichsweb) and it was only 5% of the total e-resources available on the Web. This means that majority of the papers published were accessible only through payment. He claimed that generally most of the university libraries could not manage to subscribe to a greater part of the journals for its academic and research needs. Chan, Kirsop, Costa, and Arunachalam (2005) described different problems related to openly accessible literature of science and technology in the developing countries. They evaluated 3000 journals indexed in Medline and identified that researchers of the developed countries produced 85% of the research articles with most cited material while only 2.5% research publications were produced by all the developing countries.

They further highlighted that dissemination of material through the internet enhanced access and citation rate of articles in the developed and developing countries. Antelman (2004) measured authors' impact on the basis of citations in the ISI Web of Science database in four disciplines: philosophy, political science, electrical and electrical engineering, and mathematics. He concluded that many

authors who believe openly accessible articles are highly cited, have more readerships and have a greater impact on research. Pitol and DeGroote (2014) explored openly accessible citations of articles in different journals and found that only 14.3% content was openly accessible in full text while 85.7% content was not openly accessible. They found that citation rate of openly accessible articles was higher than that of the non-accessible articles and researchers preferred to cite online articles that are available freely.

Hajjem, Harnad, and Gingras (2006) replicated the study of Lawrence (2001) in physics and tested its cross-disciplinary generality in ten other subjects, i.e., administration, economics, education, business, psychology, health, political science, sociology, biology, and law by taking 1,307,038 articles (both openly accessible and non-openly accessible) published during 12 years (1992-2003). They compared the citation ratio of articles which were 100% openly accessible and non-openly accessible. They found that the percentage of using open access articles was growing faster and there was a very strong positive relation between open access articles and citations of the articles.

Xia and Sun (2007) identified the success of openly accessible material in nine selected institutional repositories on the basis of self-archiving (depositor ship) and full-text availability. They found that the rate of author self-archiving was low and majority of the documents were uploaded by librarians and the administrative staff. The rate of full-text availability of open access repositories at Australian institutions was higher than others (Italy, Sweden, the United Kingdom, etc.). They commented that the available archives attract research scholars more than the non-accessible material. They also highlighted some strategies for the development of institutional repositories.

Craig, Plume, McVeigh, Pringle, and Amin (2007) reviewed research work of different authors who used citation count (bibliometric analysis) method with the help of different citation indexes like Thomson Scientific's Web of Science, Scopus TM, Google Scholar TM, CiteSeer, and NASA's Astrophysics Data System to find their citation impact of openly accessible and non-openly accessible articles on the basis of usability and identified subject to subject variation in the access of articles. They observed that openly accessible online articles were more cited and incredibly referred to the researchers than those not accessible online.

Ghane and Niazmand (2016) monitored the status of open accessible journal in Bangladesh, Egypt, Indonesia, Iran, Malaysia, Nigeria, Pakistan, and Turkey on the basis of DOAJ, JCR, JIF, SNIP and SCImago. They found that Egypt published the

most 490 journals and Bangladesh published fewer 29 among 1407 openly accessible journals published in D-8 countries. They revealed that the mean JIF of Pakistan was higher (0.84) as compared with other countries. Similarly, the mean SNIP was higher (0.57) for Nigeria than all other counties. Norris et al. (2008a) used citation count method (Bibliometric analysis) to compare citations from different citation indexes to find the advantages of openly accessible articles. They selected 4633 articles from four subjects, applied mathematics, ecology, economics, and sociology for examination and searched these articles from Google, Google scholar, OAIster, and the OpenDOAR. Out of the total 4633 articles, 2,280 (49%) were openly accessible (OA) and had a mean citation count of 9.04, whereas the mean for toll access (TA) articles was 5.76. The result showed that there was a big difference in the citation advantage from those articles that were openly accessible as opposed to those that were accessible through payment. Results showed that openly accessible articles were more cited than those not openly accessible but the access of articles was different in different disciplines.

In another study Norris, Oppenheim, and Rowland (2008b) examined 2519 articles on ecology (628), economics (966) and sociology (925) from the journals in the list of Journal Citation Report (JCR) of Thomson Reuter of 2003, 2004 & 2005. The bibliographic detail of each article was taken out by using four search tools OAIster, OpenDOAR, Google and Google Scholar and found only 967 (38.39%) articles openly accessible showing poor results. Chen and Du (2016) measured status and quality of LIS openly accessible journals in the Social Science Citation Index (SSCI) on the basis of three evaluation indicators: production capability, academic influence, and network communication ability. They found that these factors highly affect the quality of openly accessible journals, however they asserted that there is still room for improvement.

Arif and Kanwal (2009) observed that research scholars could not complete their research work properly due to non-availability of many digital resources and believed that limited access was a great issue of all the institutions. Consequently, it had an impact on the quantity and quality of research work. They suggested that HEC digital library should provide full-text access to all digital resources for the production of high-quality research in Pakistan. Khan and Ahmed (2013) pointed out that research scholars faced many problems while using HEC digital library resources due to a lack of knowledge regarding advanced searching techniques, particularly in full-text access to articles. Warraich and Ameen (2008) suggested that the HEC digital library should introduce effective promotional policies on

limited access to digital resources and must provide full-text access to researchers for the development of research productivity in Pakistan. Ameen (2011) appreciated the role of HEC in promoting research and recommended to subscribe to more databases for the availability of full-text journals for researchers in Pakistan. She further commented that approximately all research material in the developed countries was freely available to researchers.

Gap in Literature & Significance of the Study

Previous studies regarding accessible and non-accessible materials were limited to bibliometric studies of articles available on different sources/indexes like Google, Google Scholar, Scopus TM, OAIster, and OpenDOAR, TM, CiteSeer, NASA's Astrophysics Data System, and ISI Web of Science. In all these studies, a general picture of articles that were accessible freely from different sources/indexes or accessible online through subscription of different databases was presented. Observing the use of research journals, academic institutions in developing countries started to subscribe specific online journals from the databases. It is very difficult for an academic institution to subscribe to all the databases that offer research journals and provide the researchers free access to the journals, especially in the developing countries.

Pitol and De Groote (2014) found that only 14.3% cited contents in different journals were openly accessible. Chan (2004) identified that only 5% articles were openly available, while all other cited contents in the articles were accessible through payment. He claimed that the provision of research work is very difficult even for most of the university libraries. As a result, some important non-accessible research work has been ignored in the research.

Understanding the importance of non-accessible articles, Higher Education Commission (HEC) of Pakistan in 2003 established HEC National Digital Library (DL) and started subscription to different international databases that offer journals and e-books, for the ease of researchers of public, private and other degree awarding academic institutions. Currently, the HEC DL provides access to 75,000 electronic contents for researchers through the digital library program (Higher Education Commission, 2014). It allows researchers to easily find the increasing number of research articles which previously required several visits to the library or substantial efforts in order to access them.

Studies regarding the HEC DL, showed that researchers and library professionals were highly satisfied with the HEC digital library's resources, services

and their accuracy. These studies highlighted its success and effectiveness in research (Khan & Ahmed, 2013; Mahmood & Shafique, 2010; Rafiq & Ameen, 2012; Tahira & Ameen, 2009; Wairrach & Tahira, 2009; Warraich & Ameen, 2008). However, they raised questions that there were some journals included in the list of the HEC subscribed databases which were not fully accessible. These studies commented that non-accessible articles (due to the lapse of subscription, partial subscription, or no subscription) have a negative impact on the quality of an article (Ameen, 2011).

Keeping in view the above facts and figures, the present study aims at exploring the: (a) Ratio of full text accessible, partially accessible and non-accessible LIS journals of HEC subscribed databases, (b) Behavior of LIS researchers towards non-accessible articles, and (c) Impact of non-accessible articles on research. This study reveals the importance of online access to LIS journals in research and guides librarians for the subscription to databases. This study will inform the researchers of the non-accessible material and the services adopted by the researchers for the acquisition of non-accessible material. A thorough investigation of LIS journals on HEC subscribed databases has produced a useful understanding of the importance of the non-accessible material. It will increase the quality of research which is to be done and the citation of research articles. This study will encourage other researchers to highlight issues in the access to research articles in their respective discipline.

METHODOLOGY

Antelman (2004) ; Craig et al. (2007) ; Hajjem et al. (2006) ; Norris, Oppenheim, and Rowland (2008b) ; Pitol and De Groote (2014) ; Xia and Sun (2007) used citation count method and Raza and Upadhyay (2006) used quantitative method to measure the impact of non-accessible journals on research for their studies. In the present study, sequential exploratory strategy of mixed method research was applied to identify whether non-accessibility of LIS journals have a negative impact on research work. Creswell (2012) explained that exploratory sequential mixed method design involves firstly gathering qualitative data to explore a phenomenon, and then collecting quantitative data to explain relationships found in qualitative data.

This study was conducted in two phases. In the first phase, an online surfing of all the HEC subscribed databases available at the library website of The Islamia University of Bahawalpur. It was found that, (a) Emerald, (b) Science Direct, (c)

JSTOR, (d) Project Muse, (e) Taylor & Francis, (f) Wiley-Blackwell Journals, and (g) University of Chicago Press were the databases which contained LIS journals. A list of fully accessible, partially accessible and non-accessible LIS journals was prepared. The IF of the journals was taken from the list of Journal Citation Report of Thomson Reuter, 2013.

In the second phase, a self-structured questionnaire was prepared to check the behavior of LIS researchers toward non-accessible and partially accessible journals available in the databases of HEC digital library. The questionnaire was pre-tested by the Master of Philosophy (M. Phil) and Ph. D researchers and revised to incorporate the recommended improvements. A five point Likert-type scale was used in the questionnaire to solicit information from all the M. Phil and Ph. D scholars passed out from the library schools of Punjab, Pakistan. Internal consistency of the questionnaire was checked by using Cronbach's alpha coefficients. Cronbach's alpha scores were found .83 & .91 of the items given in (T2 & T3) respectively indicating that the reliability of the instrument was high. To collect data, the questionnaire was distributed among 90 researchers in The Islamia University Bahawalpur, University of the Punjab Lahore, Minhaj University Lahore and University of Sargodha, Pakistan having M. Phil and Ph. D in Library and Information Science. To increase the response rate, authors visited the universities continuously and contacted the researchers. Finally, 73 (81.1%) LIS researchers responded to the questionnaire.

DATA ANALYSIS

Qualitative Data Analysis

In the first step an online surfing of the HEC subscribed databases was conducted and a list of fully accessible, partially accessible and non-accessible LIS journals on (a) Emerald, (b) Science Direct, (c) JSTOR, (d) Project Muse, (e) Taylor & Francis, (f) Wiley-Blackwell Journals, and (g) University of Chicago databases was prepared. All journals of these seven databases were divided into three categories with respect to their accessibility status: (a) fully accessible, (b) partially accessible, and (c) non-accessible. The results show that 134 journals of LIS subjects were available on the seven selected databases out of which 60 (44.77%) journals were fully accessible, 50 (37.3%) were partially accessible, and 24 (17.9%) were non-accessible.

Among the seven selected databases, there were 48 (35.8%) LIS journals on Taylor & Francis database in which 09 (18.8%) journals were fully accessible, 34 (70.8%) partially accessible and 05 (10.4%) non-accessible out of which only 02

(4.2%) journals were found with the IF. There were 30 (22.4%) LIS journals on Emerald database out of which 08 (26.7%) journals were fully accessible, 12 (40%) partially accessible and 10 (33.4%) were non-accessible from which only 08 (26.7%) were found with the IF. There were 22 (16.4%) LIS journals on JSTOR database from which 19 (86.4%) journals were fully accessible, 01 (4.6%) partially accessible and 02 (9.1%) were found non-accessible from which none of the journals was found with an IF.

In Science Direct/Elsevier database there were 21 (15.7%) journals in which 18 (85.7%) journals were fully accessible, 03 (14.3%) partially accessible from which 17 (80.9%) journals were found with the IF. There were 06 (4.5%) LIS journals on Wiley-Blackwell database from which 06 (100%) journals were fully accessible, and no one was partially accessible or non-accessible, from which 04 (66.7%) journals were found with the IF. There were 05 (3.7%) LIS journals on Project Muse database in which no journal was found fully/partially accessible, and all 05 (100%) were found non-accessible and among all these no journal was found with the IF. There were 02 (1.5%) LIS journals on University of Chicago Press database in which none was fully or partially accessible and had no IF (Table. 1).

Table 1

List of accessible, non-accessible, partially accessible LIS journals and impact factor

S. N.	Database Name	Total	Accessible	Non-Accessible	Partial Accessible	Impact Factor
1	Taylor Francis	48 (35.8%)	09 (18.8%)	05 (10.4%)	34 (70.8%)	02 (4.2%)
2	Emerald	30 (22.4%)	08 (26.7%)	10 (33.4%)	12 (40%)	08 (26.7%)
3	JSTOR	22 (16.4%)	19(86.4%)	02(9.1%)	01(4.6%)	00 (0%)
4	Science Direct	21 (15.7%)	18 (85.7%)	00 (0%)	03 (14.3%)	17 (80.9%)
5	Wiley - Blackwell Journals	06 (4.5%)	06 (100%)	00(0%)	00(0%)	04 (66.7%)
6	Project Muse	05(3.7%)	00(0%)	05(100%)	00(0%)	00(0%)
7	University of Chicago Press	02(1.5%)	00(0%)	02(100%)	00(0%)	00(0%)
	Total	134	60(44.77%)	24(17.9%)	50(37.3%)	31(23.2)

Quantitative Data Analysis

Results show that respondents frequently use databases of the HEC digital library and ratio of their usage was 21 (28.8%) daily, 26 (35.6%) two times a week and 16 (21.9%) weekly. It was found that researchers of LIS were very much aware of the HEC digital library resources. They also had good awareness about the fully

accessible journals (M = 4.05) and less awareness (M = 3.34) of the non-accessible journals.

In Table 2, some questions were asked about the behavior of researchers in handling non-accessible articles during their research work. The results of the study show that researchers request their friends, on groups, social networking sites (Facebook, Twitter etc.) and author of the article. Some time, they request for the provision of articles through British Document Delivery (BDD) service. Mean value shows that most of the researchers (M = 4.14) request friends to provide them articles and very few (M = 1.55) of them purchase articles for their research work.

Table 2

Users' behavior about non-accessible articles

S. N.	Respondents' Behavior	Mean	S.D	Rank
1	Do you "request friends" for non-accessible articles relevant to your research	4.14	1.134	1
2	Do you "request group (Paklag, etc.)" for non-accessible articles relevant to your research	3.33	1.302	2
3.	Do you "ignore" non-accessible articles relevant to your research	3.25	1.362	3
4.	Do you "request on social networking sites (Facebook,Twitter, etc.) for non-accessible articles relevant to your research	2.82	1.284	4
5.	Do you "request corresponding author" for non-accessible articles relevant to your research	2.64	1.171	5
6.	Do you "request to HEC/British Document Delivery" for non-accessible articles relevant to your research	2.36	1.171	6
7	Do you "purchase" non-accessible articles relevant to your research	1.55	1.028	7

Note. N = 73

Respondents were asked whether non-accessible articles have a negative impact on research productivity. The mean value against all the 11 statements showed that respondents agreed that non-accessible articles have an adverse impact on research. Table 3 shows that non-accessible LIS journals have an adverse impact on conducting research, purifying the research, updating knowledge, writing research articles, compilation of thesis, enhancing research quality, doing research project, researching problems and on developing scholarly

communication. Mean difference among all the statements showed that non-accessible LIS journals most negatively impact the conducting of research, while the impact on scholarly communication (M = 3.85) was moderate.

Table 3

Respondents' views about the impact of non-accessible resources on different research activities (N=73)

S.N.	To what extent non-accessible LIS journals in HEC Digital library subscribed databases impact negatively on	Mean	S.D	Rank
1	Conducting research	4.18	.872	1
2	Purifying the research concepts	4.00	.799	2
3	Updating knowledge	3.96	.857	3
4	Writing research article	3.95	.956	4
5	Providing valuable guideline for research	3.90	.869	5
6	Compilation of thesis/dissertation	3.90	.930	6
7	Preparing research proposal	3.89	.906	7
8	Enhancing the quality of research	3.89	.859	8
9	Doing work(s) on project	3.88	.865	9
10	Finding suitable research problem/topic	3.86	.822	10
11	Scholarly communication	3.85	.908	11

DISCUSSION

The results of qualitative and quantitative data show that all respondents are aware of the HEC digital library resources and they frequently use all databases to fulfill their research needs. They show positive attitude toward the HEC digital library resources. The findings of this research closely confirmed the studies of (Beard, Dale, & Hutchins, 2007; Bhatia, 2011; Dadzie, 2005; Hajjem et al., 2006; Kanniyappan, Muthusamy, & Nithyanandam, 2008; Kaur & Verma, 2009; Khan, Zaidi, & Zaffar Bharati, 2009; Khan & Ahmed, 2013; Ollé & Borrego, 2010; Raza & Upadhyay, 2006; Sharma, 2009).

E-resources are the basic and important part of research development these days and one cannot deny the importance of e-resources for research purposes. However, the non-accessible material is a major concern for all the researchers around the world, particularly in the developing countries. It is no surprise that the

HEC of Pakistan has subscribed to valuable journals from different databases without laying down any clear criteria to judge the value for the subscription of the international journals, especially in the social sciences.

However, journals included in Thomson Reuter Journal Citation Report (JCR) are considered for the promotion and appointment of academic staff in the universities of Pakistan. Thomson Reuter List, 2013 showed that there were 84 journals of the information science and library science the most which had IF. Results of the study show that there were 134 journals of LIS which are available on the HEC subscribed databases in which 54 (40.3%) were fully accessible and only 31 (23.2%) LIS journals had IF as per list of JCR. The study revealed that from the above journals, 50% IF journals of LIS were not present on the subscribed databases of the HEC. This issue is endorsed by Pitol and De Groote (2014) who found that 85.7% cited content in different journals was not openly accessible.

Another study of Chan (2004) showed that only 5% articles were openly accessible and all the other articles among 23,000 were accessible through payment. Table 1 shows that Taylor & Francis was the database that had maximum (48) journals of LIS, while University of Chicago Press had only two non-accessible journals of LIS. Library and information science journals accessible through Science Direct/Elsevier database were found with maximum IF (80.9%), while LIS journals on Project Muse, JSTOR and University of Chicago Press databases had no IF factor journals of LIS.

Results of the study revealed that sometimes respondents do not find openly accessible articles needed for their research work. To access those articles, they request their friends or paste requests on the groups. Researchers also request the author of the article and request through SNS for the provision of the article. Results of the study show that respondents mostly access articles through their friends and colleagues living in the country or abroad, social media librarians' groups, correspondence with the author and from BDD service, respectively. Norris et al. (2008b) suggested that one can use Google and Google Scholar in place of OAIster and OpenDOAR to search non-accessible article. Few researchers use BDD service for the access of articles. Perhaps they consider that access of articles through BDD service is a time-consuming process that is why they may not choose this service. In spite of all these efforts, sometimes researchers could not get an article and they do not cite it in their research work. Only a very few researchers purchase articles to include in the research. Table 3 shows that respondents agreed that non-accessible articles do have a negative impact on conducting and purifying

research. Non-accessible articles also impact negatively on the quality of preparing a research proposal and writing a good thesis.

The discussion shows that majority of researchers ignore non-accessible articles which results in a negative impact on their research in quality and quantity. The results of this study approximately confirmed (Antelman, 2004; Chan et al., 2005; Craig et al., 2007; Hajjem et al., 2006; Lawrence, 2001; Norris et al., 2008b; Pitol & De Groote, 2014; Xia & Sun, 2007) statements that the percentage of using open access electronic resources is growing faster than the percentage of non-openly accessible articles. They found a very high positive correlation between the openly accessible articles and research productivity. Arif and Kanwal (2009) found that due to non-access of a large number of digital resources, researchers are unable to complete their research work properly.

LIMITATIONS & DELIMITATIONS OF THE STUDY

This study was conducted with some delimitations and limitations:

Delimitations

1. HEC DL is the only source in Pakistan that provides access to electronic resources in all disciplines.
2. Only library and information science non-accessible journals were included in the study.
3. Un-subscribed databases by the HEC having LIS journals were not included in the study.
4. Only LIS researchers of the Punjab, Pakistan were included in the study.

Limitations

1. The HEC provides access to different databases to different universities and the status of journals' availability is different at different times due to the issue of subscription.
2. The HEC has subscribed to fewer LIS journals than other subjects' journals.
3. Surfing of the HEC digital library databases was done during the period of 21-10-2014 to 02-11-2014.
4. The IF of LIS journals were observed on the basis of Thomson Reuter's list of 2013.

CONCLUSION

Research culture in Pakistan has increased with the initiation of the HEC DL's subscriptions to databases. This study indicates that usage frequency and awareness level about HEC digital library subscribed databases are high among library and information science researchers. Most of the researchers (e.g., Khan. & Ahmed., 2013; Mahmood & Shafique, 2010; Rafiq & Ameen, 2012; Tahira & Ameen, 2009; Wairrach & Tahira, 2009; Warraich & Ameen, 2008) are satisfied with the availability of online journals and they show that the issue of non-accessible journals is at the initial stage in Pakistan. Respondents of this study are aware of the services like BDD, ProQuest Summon Web-scale discovery service, SNS groups, and request to PASTIC etc. to get articles for their research work. They also get articles from friends and colleagues living in the country or abroad. They post their request on different groups for the access of non-accessible articles. Finally, if they are unable to get the article, they ignore it and do not buy the article to include in their research.

The study revealed that Science Direct, Wiley-Blackwell and to some extent Emerald are the databases which have more IF journals of LIS than Taylor & Francis, JSTOR and Project Muse subscribed databases of the HEC. The overall access to LIS IF journals is low that provides a limited choice to researchers for the inclusion of these articles in their research work. Despite all these facilities, LIS researchers agreed that non-accessible journals on the HEC subscribed databases impact negatively on their research work, in updating knowledge, purifying research work, in writing article, making research project, etc.

Findings of this study are a part of the complex picture of available/not available LIS journals on the HEC subscribed databases. They should help librarians to use different techniques for the selection and subscription of different journals from different databases.

RECOMMENDATIONS

Following recommendations are made on the basis of findings and conclusions of the study:

1. Subject experts should select journals of the relevant discipline and then recommend to the HEC for the subscription.
2. Libraries should begin POD (purchase on-demand) and PDA (patron-driven-acquisition) or DDA (demand-driven acquisition) services for the researchers.

3. HEC should subscribe to all those journals that fulfill the criteria of promotion, appointments and research incentives for the researchers.
4. HEC should provide funds and active promotional plans for the provision of full-text access to all material for research scholars of Pakistan.
5. HEC should organize training and workshops for the awareness of non-accessible resources for librarians and research scholars.
6. Librarians should organize training and workshops for the faculty members and other research scholars for spreading awareness about non-accessible resources and related services.

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