ISSN (Print): 0972-2467
ISSN (Online): 0976-2477
SRELS Journal of Information Management, Vol 55(5), October 2018, p. 237-246 DOI: 10.17821/srels/ 2018/v55i5/120853

Assessment of Self Archiving in Digital Repositories: Is there any Difference between Science and Agriculture Scholars?

Chamani Gunasekera*

University of Peradeniya, Galaha Rd – 20400, Sri Lanka; pcdsgunasekera@gmail.com

Abstract

This study examines the differences in scholarly publishing and self-archiving practices of academic scholars in the faculties of agriculture and science in University of Peradeniya, Sri Lanka. Survey method was adapted and a questionnaire specifically designed was used to achieve the objectives of the study. The study population consisted of all permanent academic staff in the two faculties. The study established that majority of the respondents of both faculties were aware of self-archiving concept as a means for providing open access but not many of them had experience in self-archiving. Majority of respondents from both faculties began this activity two to three years ago and they learnt about self-archiving by working in a field with established subject based archives. The original motivators for self-archiving were self motivation and declared citation advantage of open access papers. Agriculture scholars deposited more full text articles in digital repositories than science scholars. When analyzing the results of this study, it was proved that most of the scholars in agriculture faculty preferred to deposit conference papers while science scholars mostly preferred preprint materials. PDF is the most preferred file format to deposit in the digital repositories.

Keywords: Agriculture Scholars, Digital Repository, Science Scholars, Self Archving, Sri Lanka

1. Introduction

'Self-archiving' is "a broad term often applied to the electronic posting, without publisher mediation, of author-supplied research" (Crow, 2002 cited in Pinfield, 2004). Self archiving is an action that deposits some scholarly content in a digital repository which provides open access. Self-archiving of publications has the potential to revolutionize scholarly communication, making it more efficient and effective. But a great deal needs to be done before that potential can be realized. (Pinfield, 2004)

Self archiving process was originally used in the early 1990s by a mathematician, Greg Lawler, to describe electronic pre-prints. It was used more generally in the mid-1990s to mean "electronic versions of anything". Ginsparg was, however, influential in redefining the word to mean "an article either in draft or final form self-archived by the author." (Pinfield, 2004) This is the way the word is now generally used, particularly by users of arXiv, the largest e-print repository. Brown (2001) and Pinfield (2001) have described how arXiv is currently used by physicists. The term was first used in the literature in 1999 by leading advocates of the practice, Stevan Harnad and Paul Ginsparg (1999 cited in Pinfield, 2004). It was used by them a year earlier in email discussion lists (Harnad, 1999). It seems they were (knowingly or unknowingly) adapting a term already in use amongst computer scientists meaning a program that archives files automatically. Ginsparg and Harnad were now applying the term to authors and their research papers.

*Author for correspondence

2. What is Self Archiving?

When authors make their articles freely available in digital format on the Internet, this process is called as self archiving. These articles can be either preprints or post prints. Post prints are the final published versions of articles. They can either be the publisher's version of the article or an updated preprint that the author creates to reflect any changes made during the peer review and editorial processes. Digital preprints and post prints are called e-prints. Although the open access movement focuses on peer-reviewed literature, the term e-print is also widely used to refer to digital versions of articles that will be or have been published in scholarly, but non-peer-reviewed journals and magazines. Moreover, other types of scholarly digital materials, such as conference presentations (e.g. PowerPoint presentations), may be self-archived by their authors either on author's personal website or subject based archives.

The most common ways that e-prints are made available on the Internet are authors' personal Websites, subject archives or institutional repositories. These self-archiving strategies are not unique. An author can self-archive the same e-print on multiple sites to increase the likelihood that it will be found by interested users.

3. Self Archiving Process

Self -archiving is a relatively young concept, only as old as the internet. It has experienced rapid growth in the last two decades, as the web has become more widely available and network speeds have increased (Suber, 2010). As a result, the study of self -archiving practices among research faculty is quite new, and methodologies and conceptual frameworks for understanding them are still under development. Researchers are just starting to uncover the incentives and influences affecting faculty self-archiving and open access publishing behavior, and little work has been done to synthesize these results into a comprehensive understanding of what impact the open access movement is having on the scholarly communication system as a whole.

This study was conducted to gain knowledge of scholarly publishing and self archiving practices of university academics in Sri Lanka.

4. Review of Related Literature

A substantial body of literature relating to Institutional Repositories (IR) and their use is available and most investigate the attitudes of faculty members towards IRs and their contribution to repositories but studies on awareness, practices and perceptions towards self archiving among academic community are not many. Only a few studies have undertaken to evaluate the status of self-archiving across disciplines. Those that have focused on this topic typically surveyed faculty about their willingness to self archive research. One of the remarkable studies is a study carried out by Swan and Brown among 1296 scholars with one of the findings pointing to the particularly enthusiastic contributions of scholars in library and information science. The study investigated author self-archiving behavior and found that a substantial proportion of authors were unaware of the possibility of providing open access to their work. Only 30% of the respondents were using open access initiatives and only 10% of authors knew of the list of publishers' permissions policy with respect to self-archiving. More people opted for putting their work on a website than use institutional or subject-based repository. However, a vast majority of authors would willingly comply with a mandate from their employer or research funder to deposit copies of their articles in an institutional or subject-based repository. They found that authors' reluctance to self-archiving their work was due to the perceived time required and technical difficulties in carrying out the activity (Swan & Brown, 2004).

Xia (2007) examined self-archiving practices in four disciplines– chemistry, economics, physics, and sociology in seven institutional repositories. The research found that a disciplinary culture is not obviously present. Rather, self-archiving is regulated by a liaison system which has played a key role for making content size of the digital repository large and making it more useful. At the same time, the study established that a mandate has impacted self-archiving practice across disciplines.

Kim (2011) conducted a study to examine the perceptions regarding IRs of faculty members from 17 Carnegie doctorate-granting universities in the US. The study identified behavioral factors that motivate or impede the willingness of faculty to self-archive in IRs.

The study found that preservation and copyright as the major motivational factors and hence it recommended the policies on copyright management for IR materials should be established, and faculty need to be well informed of copyright issues to alleviate concerns and to increase their participation in IRs. Singeh, Abrizah and Karim (2013) share a Malaysian case examining conditions that inhibit authors from self-archiving in open access repositories. According to their study, the major barrier was fear of plagiarism.

As early as 2001, a survey of scholars randomly chosen from nine scientific disciplines from colleges and universities in the United States and Canada was conducted to determine faculty participation in depositing materials into digital repositories (Lawal, 2002). Physicists and astronomers reported the highest participation, followed by mathematicians and computer scientists, engineers, cognitive scientists and psychologists, and biological scientists. Lawal (2002) found that those who reported participation cited the dissemination of research results, visibility, and the author's exposure as reasons for depositing their work. Reasons for non-participation included publisher policies, relevance to their field, and technological constraints.

Rumsey conducted a survey of 25 UK IRs to examine self-archiving attitudes in the UK. Academics in science, technical and medical disciplines were found to be more active in depositing content rather than academics in humanities. Similarly, open access awareness in academics in humanities was low (Rumsey, 2006). Andrew (2003) conducted a case study on current trends in posting research materials online in colleges of the University of Edinburgh. A direct correlation between willingness to self-archive and the existence of subject-based repositories was found. It was concluded that scholars are more likely to post research material on their own web pages, until such time subject repositories become trusted for their comprehensiveness and persistence.

The development of IRs in university libraries, especially in developed societies has been a global phenomenon. In the Sri Lankan context, very few studies have been conducted on IRs and most of them shared their experiences in developing them in their respective universities but no study was found on self-archiving.

5. Objectives of the Study

This study focuses on differences in scholarly publishing and self-archiving practices of academic scholars in the two faculties of University of Peradeniya, Sri Lanka. The specific objectives of the study are as follows:

1. To understand the current practices and views regarding self archiving of the scholars in the Faculty of Science and Agriculture in the University of Peradeniya,
2. To study awareness about self-archiving among these scholars, and
3. To find out the differences in self-archiving pattern of the scholars in the Faculty of Science and Agriculture in the University of Peradeniya.

6. Methodology

Survey method was adapted and a questionnaire specifically designed and pre tested was used. The study population consisted of all permanent academics in the Faculty of sciences and the Faculty of Agriculture of University of Peradeniya, Sri Lanka. The questionnaire was distributed to all 238 academics in May, 2017 and they were requested to send completed questionnaires within one month of time. Due to low rate of responses received after one month a reminder was sent on August, 2017 and the received data were analyzed using SPSS (17.0).

7. Analysis of Data

The number of responses to the questionnaire distributed is as shown in the Table 1 and 2.

Table 1. Distribution and responses of questionnaire

Sl. No.	Faculty	Distributed Number	Responded Number	Percentage
1.	Agriculture	126	106	84.1%
2.	Science	112	98	87.5%
	Total	**238**	**204**	**85.7%**

Table 2. Respondents by academic position

Sl. No.	Academic Position	Agriculture Faculty		Science Faculty	
		Frequency	Percentage	Frequency	Percentage
1.	Senior professor	7	6.5	08	7.4
2.	Professor	15	14.6	12	12.8
3.	Associate professor	02	1.5	03	2.6
4.	Senior lecturer grade I &II	60	56.4	49	50.0
5.	Lecturer/ Lecturer (Probationary)	22	21.0	26	27.2
	Total	**106**	**100**	**98**	**100**

8. Length of Time as Academics

Respondents were asked how long they had worked in academia. They were given four options: 5 years or less, 6–10 years, 11–15 years and More than 15 years. The responses are in Table 3.

More than half of the respondents in the Faculty of Agriculture and nearly half of them in the Faculty of Science were long-standing members of the academic community, with 11–15 years service while nearly quarter of them in the Faculty of Agriculture had more than 15 years service.

9. Quantity of Scholarly Publication per Year

Respondents were asked to indicate the number of publications such as conference papers, peer reviewed articles, technical reports or other types of scholarly communication that they authored or co-authored annually and the results are presented in the Table 4.

Significant finding was even though the majority of the respondents in both faculties had been in academia over eleven years; the largest proportion had published seven or lesser papers during their career.

Table 3. Length of time as academics

SL. No.	Academic Position	Agriculture Faculty		Science Faculty	
		Frequency	Percentage	Frequency	Percentage
1.	5 years or less	11	10.5	14	14.3
2.	6-10 years	15	14.1	19	19.4
3.	11-15 years	54	50.9	48	49.0
4.	More than 15	26	24.5	17	17.3
	Total	**106**	**100**	**98**	**100**

Table 4. Number of papers published

Sl. No.	Number of papers published	Agriculture Faculty		Science Faculty	
		Frequency	Percentage	Frequency	Percentage
1.	0 to 1 per year	08	7.6	10	9.2
2.	2 to 4 per year	38	35.8	27	27.6
3.	5 to 7 per year	26	24.6	34	35.1
4.	8 to 10 per year	18	16.7	17	17.1
5.	More than 10 per year	15	14.2	08	8.8
6.	Not responded	01	1.1	02	2.2
	Total	**106**	**100**	**98**	**100**

10. Awareness of Self-Archiving as a Means to Providing Open Access

Most of the previous studies carried out on self archiving by scholars in academic institutions had found a substantial proportion of authors who were unaware of the possibility of providing open access to their work.(Swan and Brown, 2005; Xia, 2007; Mackie, 2004) The respondents of this study were asked whether they were aware of the possibility of providing open access to their work by self archiving and the data displayed in Figure 1 and 2. Figures are percentages of respondents and are rounded.

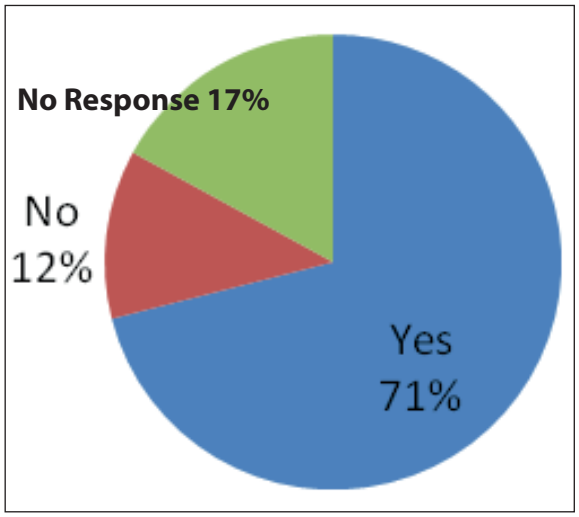

Figure 1. Awareness of self archives (Agriculture).

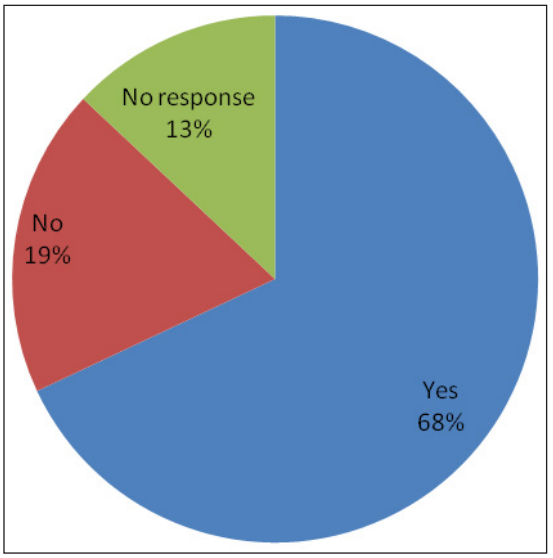

Figure 2. Awareness of self archives (Science).

Majority of the respondents were aware of self archiving as a means of providing open access. However, nearly a fifth of the respondents in the faculty of science were not aware of it and another 13% did not respond.

Those who are aware of the possibility of self-archiving learned about it from a range of sources (Table 5).

As revealed in Table 5, majority of the respondents in both faculties mentioned that they learnt about self archiving by working in a field with established subject based archives. 28% of science scholars and 20% of agriculture scholars became aware of it by following the debate on open access.

Table 5. Sources of information on self-archiving

Sl. No.	Channel	Agriculture Faculty		Science Faculty	
		Frequency	Percentage	Frequency	Percentage
1.	Work in a field with established subject based Archives	28	26.5	31	31.6
2.	Followed the debate on open Access	22	20.2	28	28.5
3.	From information provided by institution or library	11	10.5	4	4.1
4.	From information provided by department	09	8.6	6	6.2
5.	From peers	07	6.7	1	1.1
6.	From co-authors	05	4.8	0	0
7.	No response	24	22.7	28	28.5
	Total	**106**	**100**	**98**	**100**

11. Experience in Self Archiving Practices

Those respondents who had self-archived were asked for how long they have been doing this. The results are shown in Table 6 and Figure 3.

Clearly self-archiving in the University of Peradeniya is a recent development.

12. Motivation Issues

Self-archiving respondents were asked what the original motivator for self-archiving their work and the results are shown in Table 7.

Citation advantage is clearly a major motivating factor.

Table 6. Experience of self-archiving

Sl. No.	Experience of self-archiving	Agriculture Faculty		Science Faculty	
		Frequency	Percentage	Frequency	Percentage
1.	Within the last year	18	17	21	21
2.	2-3 years	41	38	23	23
3.	3-5 years	07	07	09	09
4.	Longer than 5 years	05	05	11	11
5.	No response	35	33	34	34
	Total	**106**	**100**	**98**	**100**

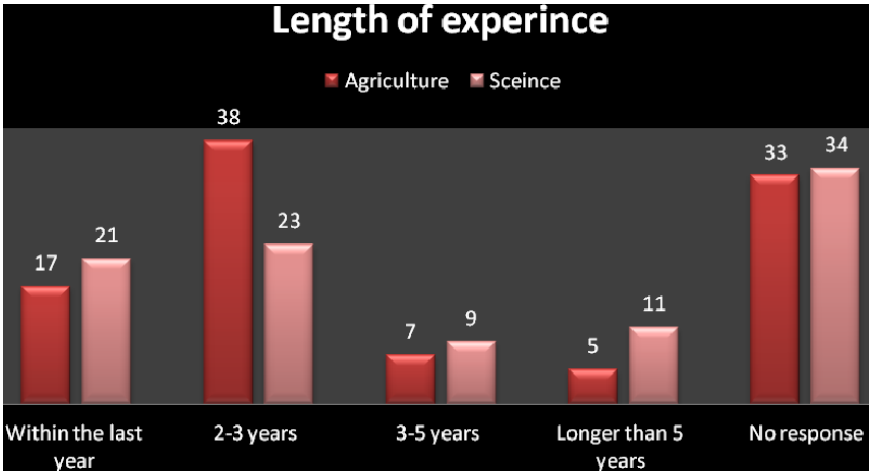

Figure 3. Length of experience in self archiving.

Table 7. Source of motivation for self-archiving

Sl. No.	Original motivator for self-archiving	Agriculture Faculty		Science Faculty	
		Frequency	Percentage		
1.	I was principally self-motivated	26	24.5	29	29.6
2.	Open access articles are cited more often than articles accessible only in subscription journals	16	15.0	19	19.4
3.	Encouragement from colleagues or co-authors	12	11.3	07	7.1
4.	Encouragement from library or university administration	10	9.4	09	9.2
5.	Encouragement from department	09	8.5	05	5.1
6.	Encouragement from research funders	07	6.6	10	10.2
7.	Not responded	26	24.5	19	19.4
	Total	**106**	**100**	**98**	**100**

13. The Mechanics of Self-Archiving

13.1 Who has Actually done the Self-Archiving?

There are several archives around the world where majority of articles have been deposited by archive administrative staff. The responses in this survey are as in Figure 4.

62% of science scholars and 58% of agriculture scholars self archived their papers.

13.2 How Difficult is it to Self-Archive?

There is a common perception among authors that the process of self archiving is time-consuming and inconvenient; but authors who have self-archived their papers find the process simple and quick (Harnad & Brody, 2004). The scholars in both faculties who have self archiving experience were asked how difficult the process of self archiving for them and the responses are given in Table 8.

Only a small percentage of authors found the process to be very easy. While a large number did not find the process to be either easy or difficult, clearly there is need to simplify the procedure and for training authors.

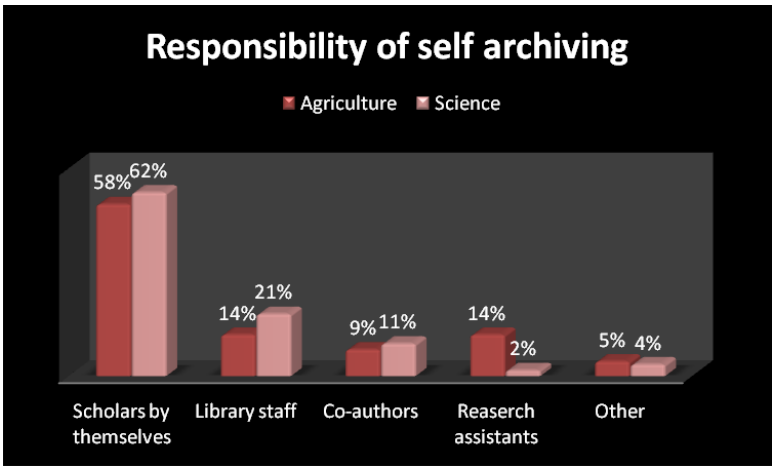

Figure 4. Responsibility of self archiving.

Table 8. Ease of self archiving process

Sl. No.	Perception	Agriculture Faculty		Science Faculty	
		Frequency	Percentage	Frequency	Percentage
1.	Very easy	12	11.3	17	17.4
2.	Neither easy nor difficult	36	34.0	42	42.9
3.	Somewhat difficult	17	16.0	11	11.2
4.	Very difficult	12	11.3	10	10.2
5.	Not respond	29	27.4	18	18.3
	Total	**106**	**100**	**98**	**100**

14. The Level of Self Archiving Activity

Respondents of the study were asked to indicate how many times in the past three years they had deposited full texts of their research articles in various depositories. The results for this question are shown in Figure 5. Figure is percentages of respondents and are rounded.

The results revealed that 39% of science scholars did not deposit any full text articles; 33% of them deposited one article and only 14% deposited more than five articles during last three years. The level of self archiving activity is somewhat different among agriculture scholars as number of articles deposited by them during last three years is increasing and only 33% of them did not deposit whereas 45% deposited more than two articles which is a good number when compared with science scholars.

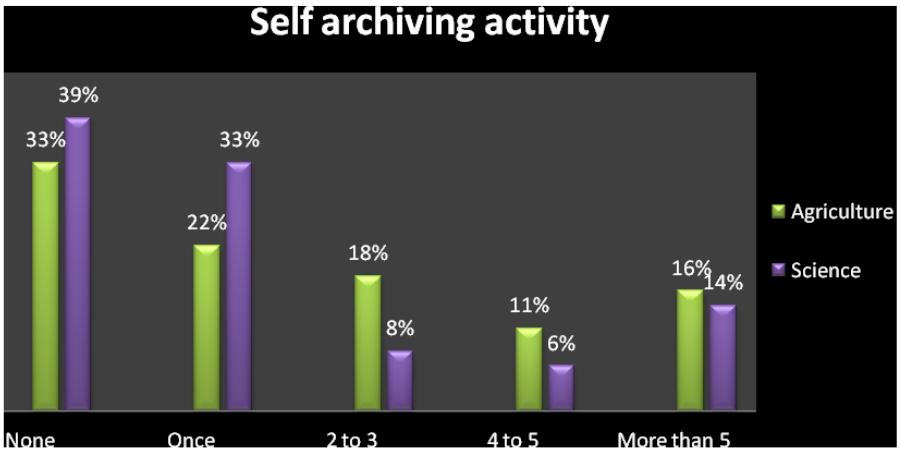

Figure 5. Level of self archiving activity.

14.1 Type of Content that was Preferred to be Deposited in the Open Archive(s)

There are three ways a researcher can provide open access to articles by self archiving. S/he can deposit a copy of an article on a personal or institutional website, or place it in an institutional open access archive, or put it in a subject based centralized open access archive. The respondents of this study were asked what types of information they had deposited in the open archive(s). Table 9 shows the results with digital objects that are preferred to deposit by the scholars in two faculties separately.

As explicit from Table 9, 33% of agriculture scholars who responded to the survey would like to self archive conference papers followed by 19% post print articles and 16% preprints materials. Science scholars, (33%) prefer to self archive preprints, course ware (24%) and conference papers (22%) in the digital repositories.

Table 9. Digital objects deposited by self-archivers (Multiple responses allowed)

Sl. No.	Type of digital object deposited	Agriculture Faculty		Science Faculty	
		Frequency	Percentage	Frequency	Percentage
1.	Presentation	11	10.4	17	17.3
2.	Post print	21	19.8	18	18.3
3.	Conference paper	35	33.0	22	22.4
4.	Technical report	09	8.5	03	3.1
5.	Co-authored work	05	4.7	06	6.1
6.	Thesis or dissertation	02	1.2	04	4.1
7.	Preprint	17	16.0	32	32.6
8.	Book chapters	06	5.7	09	9.2
9.	Courseware (teaching materials)	14	13.2	23	23.5
10.	Software	02	1.2	06	6.1
11.	Manual	05	4.7	02	2.0
12.	Discussion paper	12	11.3	03	3.1
13.	Monograph	05	4.7	00	00

Note : N = 204

15. Preferred File Formats for Depositing by Self-Archives (Multiple Responses Allowed)

The responses to the preferred file format are shown in Table 10.

PDF is the most preferred file format of scholars in both faculties A small number preferred word files (doc/docx) and HTML

16. Conclusion and Recommendations

The findings established that majority of the respondents of both faculties were aware on self archiving concept as a means of providing open access but only a small number had experience in self archiving. Self-archiving is still not widely practiced. There is a need to create greater awareness and educate academics on the importance of self archiving. It is suggested here that seminars and workshops be conducted to create awareness and understanding of self archiving among the university academics. At the same time the university should conduct an open access advocacy campaign and training sessions for researchers to demonstrate access and publish in open access repositories. There is also a need to carry out studies of self-archiving practices among scholars of other disciplines and in other universities in Sri Lanka.

Table 10. Preferred file format deposited

Sl. No.	Type of file format deposited	Agriculture Faculty		Science Faculty	
		Frequency	Percentage	Frequency	Percentage
1.	PDF	32	30.2	24	24.5
2.	Word processed documents (eg. MsWord)	22	20.8	17	17.4
3.	Presentations (eg. MsPowerPoint)	11	10.4	08	8.2
4.	Image (Gif, JPG, and TIFE etc.)	09	8.5	06	6.1
5.	HTML	09	8.5	09	9.2
6.	Rich Text format (RTF)	06	5.7	05	5.1
7.	Video (MPEG, Quick Time, Apple, DVI)	05	4.7	05	5.1
8.	XML	03	2.8	04	4.1
9.	Spreadsheet (eg. MsExcel)	02	1.9	05	5.1
10.	Database (eg. MsAccess)	01	0.9	08	8.2
11.	Sound (WAV, MP3, AIFF)	01	0.9	09	9.2
12.	Desktop publishing or typesetting (postscript/Latex)	01	0.9	04	4.1
13.	Technical drawings	01	0.9	01	1.0

Note : N = 204

17. References

Andrew, T. (2003). Trends in Self-Posting of Research Material Online by Academic Staff. *Ariadne, Issue 37.* Accessed on 12.06.2016. Retrieved from: http://www.ariadne.ac.uk/issue37/andrew/.

Brown, A. (1998). Organizational culture. 2nd ed. London: Financial Times: Pitman Publishing; https://doi.org/10.1287/orsc.9.2.176.

Harnad, S. (1998). Free at last: The future of peer-reviewed journals. *D-Lib Magazine, 5,* 12. Retrieved from http://www.dlib.org/dlib/december99/12harnad.html on 12/09/2016.

Harnad, S. (1999). Re: Free Access vs. Open Access. *SPARC-IR, 15.* Accessed on 12/08/2016. Retrieved from https://mx2.arl.org/Lists/SPARC-IR/Message/167.html.

Harnad, S. and Brody, T. (2004). Comparing the impact of Open Access (OA) vs. non-OA articles in the same journals. *D-Lib Magazine, 10*(6). Accessed on 09.12.0216. Retrieved from http://eprints.soton.ac.uk/260207/1/06harnad.html.

Kim, J. (2011). Motivations of faculty self-archiving in institutional repositories. *The Journal of Academic Librarianship, 37*(3), 246–54. https://doi.org/10.1016/j.acalib.2011.02.017.

Lawal, I. (2002). Scholarly Communication: The Use and Non-Use of E-Print Archives for the Dissemination of Scientific

Information. *Issues in Science and Technology Librarianship, 36.* Accessed on 11.12.2016. Retrieved from http://www.istl.org/02-fall/article3.html.

Mackie, M. (2004). Filling institutional repositories: Practical strategies from the DAEDA LUS project. *Ariadne, 39*. Accessed on 24.03.2017. Retrieved from http://www.ariadne.ac.uk.library/issue39/mackie/.

Pinfield, S. (2004) Self-archiving publications. In: G.E. Gorman and F. Rowland (eds), International Yearbook of Library and Information Management 2004/2005: Scholarly Publishing in an Electronic Era. London: Facet Publishing; 118-45.

Rumsey, S. (2006). The purpose of institutional repositories in UK higher education: A repository manager's view. *International Journal of Information Management, 26,* 181–86. https://doi.org/10.1016/j.ijinfomgt.2006.01.002.

Singeh, F. W.; Abrizah, A. and Karim, N. (2013). What inhibits authors to self-archive in open access repositories? *A Malaysian case. Information Development, 29*(1), 24-35. https://doi.org/10.1177/0266666912450450.

Suber, P. (2010). Open Access Overview: Focusing on Open Access to Peer-Reviewed Research Articles and their Preprints. Accessed on 12.09.2016. Retrieved from http://www.earlham.edu/~peters/fos/overview.htm.

Swan, A. (2005). Open Access self-archiving: An introduction. Accessed on 15.10.2016. Retrieved from http://eprints.ecs.soton. ac. uk/11006/01/jiscsum.pdf.

Swan, A. and Brown, S. (2004). Open access self-archiving: an author study. Cornwall, UK: Key Perspectives Limited. Accessed on 04.10.2016. Retrieved from http://www.jisc.ac.uk/uploaded_documents/Open%20Access%20Self%20Archiving-an%20author%20student.pdf.

Xia, J. (2007). Assessment of self-archiving in institutional repositories: Across disciplines. *The Journal of Academic Librarianship, 33,* 647–54. https://doi.org/10.1016/j.acalib.2007.09.020.