SITUATION ANALYSIS AND CAPACITY BUILDING NEEDS FOR OPEN ACCESS

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1.0 Introduction

Scholars in developed, developing and emerging countries are getting tuned to open access world day-by-day, as free flow of knowledge helps in opening up new opportunities and new possibilities in addressing solutions to today's societal problems or technological challenges. Open access has shown new way of dissemination of research results to larger audience and realization of outcomes of research. Public-funded research is more oriented towards achieving outcomes and the impact of the research is given priority by the funders or donor agencies. Open Access principle is also handholding openness of whole knowledge ecosystem. Open standards and open innovation are also getting supported by the notion of open access in the knowledge communities.

Open Access to scholarly communication is an emerging area and it has been in different level of development in different types of countries. Authors, researchers and faculty members have been playing dual roles in the tune of content creation and content utilization. Different modes of open access to knowledge are available to the researchers' community.

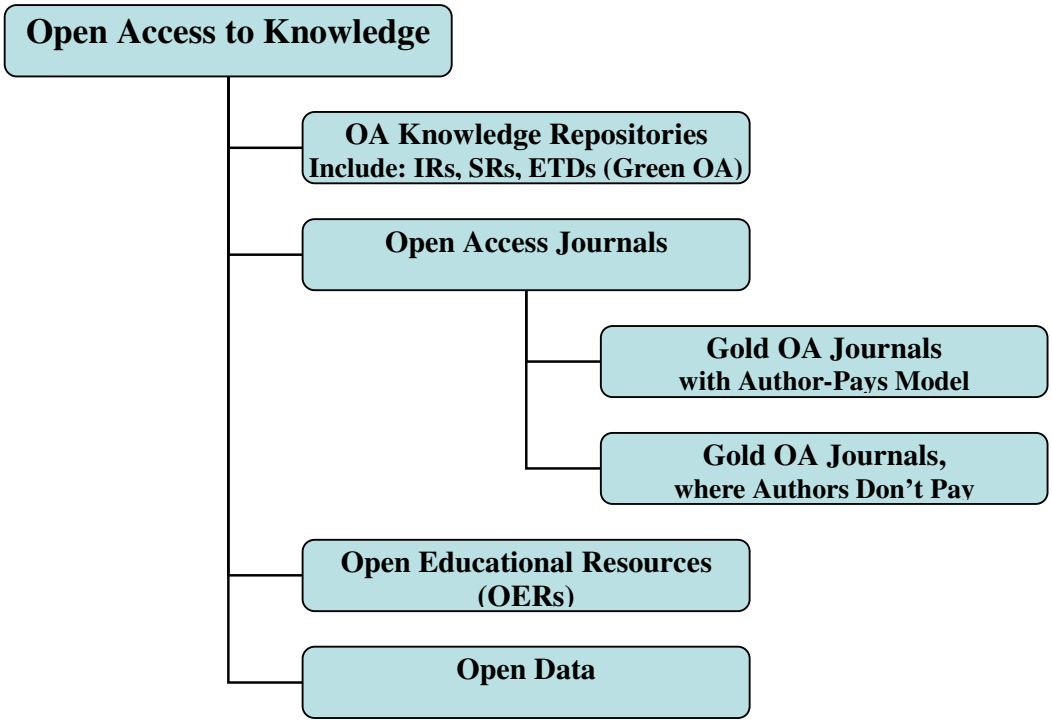

Figure 1: Different Channels of Open Access to Knowledge

Figure 1 gives an overview of different modes of open access to knowledge. Self-archiving to open access knowledge repositories is popularly known as Green Open

Access. Open access (OA) repositories maintained by an institution for archiving its intellectual outputs and publications is called institutional repository (IR). Although, an IR has provision of self-archiving, in some cases papers are uploaded by the repository personnel in order to achieve a minimum threshold before IR is thrown open to the world. When a scholarly community or a national level agency maintains an open access repository in any broad or narrower subject area, it is usually called a subject repository (SR) or disciplinary repository. Another kind of repository is maintained for preserving specialized contents of theses and dissertations. This kind of repository is popularly known as electronic theses and dissertations or ETDs. ETDs are operated at the institutional level, national level or international level. IRs and SRs allow self-archiving of publications by registered scholars. Their postings or submissions are validated by the repository staff or moderator before permanently storing into the repository. In most of the cases, records of ETDs are created by repository personnel, because it requires more stringent validation by the degree awarding authority. Conference organizers are also sometimes engaged in preserving presented full-text papers and presentations through creating an OA knowledge repository of the respective conference(s). All these open access digital repositories come under the category of OA knowledge repository. These are part of Green OA channel. These are relatively slow in making publications available to the global communities, as self-archiving takes place after few days or even months of actual publishing.

Then Figure 1 tells about Open Access Journals. OA Journal is a kind of online periodical that publishes primary literature in regular interval after usual peer-reviewing process. Similar to conventional journals, OA journals organize their contents in volumes and issues. Full-text contents of OA journals are accessible to readers without any charges. However, some OA journals insist free online registration before reading their contents. Some OA journals also have print editions, which are usually subscription-based.

OA journals are part of Gold Open Access channel. Gold OA makes immediate online availability of published research literature, whereas Green OA is relatively slower. Some OA journals operate in author-pays model, where authors of accepted papers need to pay a publishing fee or article processing charge (APC) to cover operational cost for running their service. An article processing charge sometimes hinders authors from developing countries in publishing in those journals. Most of the times, this charge is realized from the research funding agencies, especially when these agencies have open access mandate for public funded research.

A number of subscription-based journals of commercial publishers now have started publishing hybrid papers in their conventional journals. While authors pay a publishing fee for publishing an accepted paper in open access mode in a conventional journal, that paper is called a hybrid paper. It will be part of regular volume and issue of that particular journal. However, any reader and non-subscriber of that journal can online access full-text contents of OA articles. Major commercial publishers such as Elsevier, Springer, Emerald, IEEE, Oxford University Press, Wiley, etc., have already launched special programmes to attract authors publishing OA articles in their conventional journals. These publishers are also trying to collaborate with international and national research funding agencies for getting their supports in this regard.

On the other hand, a majority of OA journals are still published by non-profit entities. These OA journals are published or supported by R&D institutions, universities, scientific societies and other non-profit bodies. They have different sources for earning revenue for covering publishing costs, such as, annual programme budget, membership fees, print subscriptions, and advertisements. They usually don't charge a publishing fee from authors for publishing OA articles in their journals.

Figure 1 also indicates another kind of OA channel – Open Educational Resources (OER). Open courseware, open textbooks, educational materials and other educational resources freely available online with open licensing are broadly referred as open educational resources (OERs). OER caters to very large and diverse audiences such as students of formal courses from school to university level, lifelong learners, distance learners, non-formal learners, educators, and trainers. OER helps in knowledge refreshment, skills enrichment, skills up gradation, continuous education and other learning experiences of individuals. Some OERs have also been deployed for imparting awareness raising, and sensitizing a group of people on different aspects of societal needs.

Next category of open access resources is open data. Citizens in democratic countries under the mandate of right to information (RTI) and freedom of information (FoI) seek public sector information (PSI) from government authorities. Open data portals systematically disseminate PSI to citizens. Open data also have different sub-categories depending on nature of data, for example, open government data and open science data. In scientific research domain, open science data are also made available along with research literature so that other researchers can use, reuse, evaluate and analyse available/ archived data. United Nations agencies and some national governments have already established open data portals for dissemination of processed datasets, data tables and statistical tables.

2.0 Present Scenario of Open Access Publishing

As indicated earlier, open access journals are published by publishers located in developed, developing as well as emerging countries. Directory of Open Access Journals (DOAJ.org) is most popular global directory of OA periodicals. It covers 9721 stable OA journals having ISSN and publish regularly. Table 1 provides list of top ten OA journal publishing countries as listed in DOAJ. The United States stands first in global ranking with 14.08% global share, Brazil stands second with 9.33% global share and United Kingdom stands third with 6.35% global share. DOAJ also indicates that majority of journals are published from English speaking countries and mostly in English language, and significantly come from United States, United Kingdom, India, Canada and other countries. Countries in Top Ten league together contribute 56.87% in worldwide OA journal publishing. The BRICS countries (Brazil, Russia, India, China and South Africa) are considered worldwide as emerging economies due to their economic prowess in the process of globalization. Table 2 provides details of contributions BRICS countries made in publishing OA journals. This Table indicates that this group of five nations together have 17.31% global share in worldwide OA journal publishing.

In the previous section it is mentioned that a number of OA journal publishers demand article processing charge (APC) from authors of accepted papers. Majority of these publishers belong to for-profit sector, where OA journals operate under the

author-pays model and receive an APC for resource mobilization. Table 3 shows that majority of DOAJ-listed journal, about 65.74%, do not require any APC or publishing fee from authors of accepted papers. Only 28.17% DOAJ-listed journals require APC, whereas about 3.89% journals require conditional APC for getting published there. Unfortunately, the concept of APC becomes a source of attractions to newcomer commercial publishers who have neither interest in qualitative scholarly communications nor have prior experience in academic publishing. They are only making noise in Gold OA domain, although this domain already has reputable, credible and trusted OA publishers as listed in Table 4. The Hindawi Publishing Corporation is the major OA publishers having 500+ OA peer-reviewed journals, followed by Medknow Publications, a part of WoltersKluwerHealth group, having 274 OA journals. This Table also includes Public Library of Science (PLOS), BioMed Central and few others pioneer OA publishers that conceptualized Gold OA publishing and made them acceptable to global scientific communities.

Table 1: Top Ten OA Journal Publishing Countries in DOAJ
(Source: DOAJ.org as on 28th June 2013)

Global Rank	Country	Total No. Journals
1	United States	1369
2	Brazil	907
3	United Kingdom	617
4	India	593
5	Spain	494
6	Egypt	398
7	Germany	312
8	Romania	289
9	Canada	276
10	Italy	274
	Group Total	5529
	World share by this group of countries	56.87%

Table 2: OA Journals Published from BRICS Countries in DOAJ
(Source: DOAJ.org as on 28th June 2013)

Global Rank	Country	Total No. Journals
2	Brazil	907
4	India	593
32	Russia	71
33	South Africa	64
38	China	48
	Group Total	1683
	World share by this group of countries	17.31%

Table 3: OA Journal Distribution by Publication Charges
(Source: DOAJ.org as on 28th June 2013)

By Publication Charges	No. of Journals	Percent
No Article Processing Charge	6382	65.74
With Article Processing Charge	2735	28.17
Conditional Article Processing Charge	378	03.89
No information on Article Processing Charge	213	02.19

Table 4: Indicative List of Reputed Open Access Publishers
(Source: respective websites, as on 28th June 2013)

Name of Publisher	No. of peer-reviewed OA journals
Hindawi Publishing Corporation	500
Medknow Publications (now part of WoltersKluwerHealth)	274
BioMed Central (now owned by Springer)	256
Bentham Open	230
National Institute of Science Communication and Information Resources (NISCAIR), India	17
Indian Academy of Sciences (IAS), India	11
Public Library of Science (PLOS)	7
Chemistry Central (now owned by Springer)	7
Indian Council of Agricultural Research	7

2.1 Open Licensing

Open access publishing has been following open licensing policy for safeguarding intellectual property and rights of individual authors, research funding agencies and host institutions. Fair use of research literature is permissible under open licensing. The users also have full and unrestricted access to literature. But there are certain restrictions in commercial re-use, derivative works, sharing in altered form and remixing as mentioned in different attributions of an open license system. Creative Commons or CC is most preferred open licensing system for resources in OA domain. Table 5 highlights majority, about 48.65%, OA journals prefer open licensing option "CC-BY Attribution" that allows commercial re-use, derivation, sharing and remixing. The second most preferred open licensing option (about 22.43%) is "CC-BY-NC Attribution Non-Commercial". This Table is based on information provided by 3406 DOAJ-listed journals. Other options of Creative Commons license are: "CC-BY-ND Attribution No-Derivatives", "CC-BY-SA Attribution Share-Alike", "CC-BY-NC-SA Attribution Non-Commercial Share-Alike", and "CC-BY-NC-ND Attribution Non-Commercial No-Derivatives". CC-BY Attribution is considered as most liberal option, whereas CC-BY-NC-SA Attribution is most restrictive option in open licensing. Every option also expects an acknowledgement in the form of citation, if the work is used by the researchers.

Table 5: OA Journal Distribution by Nature of Open Licence
(Source: DOAJ.org as on 28th June 2013)

License Option	No. of Journals	Percent
CC-BY Attribution	1657	48.65
CC-BY-NC Attribution Non-Commercial	764	22.43
CC-BY-NC-ND Attribution Non-Commercial No Derivatives	662	19.44
CC-BY-NC-SA Attribution Non-Commercial Share Alike	235	06.89
CC-BY-SA Attribution Share Alike	46	01.35
CC-BY-ND Attribution No Derivatives	42	01.23
Known Licenses Total	3406	

2.2 Open Access Knowledge Repositories

Researchers around the world have been self-arching their published or un-published papers in open access institutional repositories and subject repositories for increasing their availability, usage and visibility. This is also popularly known as 'posting' of research papers in digital repositories. Thanks to a vibrant open access movement around the world, a majority of commercial publishers now have accepted practice of self-archiving or posting of unedited or pre-print or post-print version of papers in open access repositories. This domain of self-archiving is also popularly known as Green Open Access channel. Commercial publishers apply different embargoes for restricting posting to Green OA channel. Time period embargo and embargo in posting final version of paper are most popular embargoes they usually apply. On the other hand, posting of papers in OA repositories also ensures worldwide visibility of the archived papers, hence, it may improve the citation counts of those papers. Thus, making a paper available in OA knowledge repository, helps authors, host institutions, funding agencies and publishers in achieving much greater global visibility of their research work.

The Directory of Open Access Repositories (OpenDOAR.org) is most popular global directory of OA knowledge repositories. As on 28th June 2013, about 2321 stable and trusted OA knowledge repositories are listed in this comprehensive directory. Table 6 provides list of top twelve host countries of OA knowledge repositories as listed in OpenDOAR. The United States stands first in global ranking with 17.1% global share, United Kingdom stands second with 9.3% global share and Germany stands third with 7.1% global share. OpenDOAR also indicates that majority of repositories belong to English speaking countries such as United States, United Kingdom, Canada and India. Countries in Top Twelve league together contribute 63.64% global share of OA knowledge repositories. Table 7 provides details of contributions BRICS countries made in hosting OA knowledge repositories. This Table indicates that this group of five nations together contribute only 8.5% global share of hosting OA knowledge repositories, as opposed to 17.31% global share of OA journal publishing shown in Table 2.

Figure 2 shows global share of hosting OA knowledge repositories by geographic regions. The Europe stands highest with 56.31% global share, followed by North America with 24.51% global share. Other geographic regions including Africa, Asia,

South and Central America only have 19.18% global share. Although, majority of developing nations and emerging countries belong to these seven geographic regions.

Tables 6 and 7 and Figure 2 indicate that number of OA knowledge repositories from developing nations and emerging countries is still insignificant and need a focused plan of action to boost up their contributions in global OA literature and OA content creation.

Table 6: Top Twelve Host Countries of OA Repositories, as listed in OpenDOAR
(Source: OpenDOAR.org as on 28th June 2013)

Rank	Country	Total No. of Repositories	Global share (%)
1	United States	397	17.1
2	United Kingdom	216	9.3
3	Germany	165	7.1
4	Japan	138	5.9
5	Spain	99	4.3
6	Poland	75	3.2
7	Italy	73	3.1
8	France	72	3.1
9	Brazil	67	2.9
10	Canada	59	2.5
11	India	58	2.5
11	Taiwan	58	2.5
	Group Total	**1477**	**63.64**
	Other Countries	844	36.36
	Total	2321	

Table 7: OA Repositories from BRICS Countries, as listed in OpenDOAR
(Source: OpenDOAR.org as on 28th June 2013)

Country	Total No. of Repositories	Global share (%)
Brazil	67	2.9
India	58	2.5
China	33	1.42
South Africa	25	1.08
Russia	14	0.6
Group Total	**197**	**8.5**

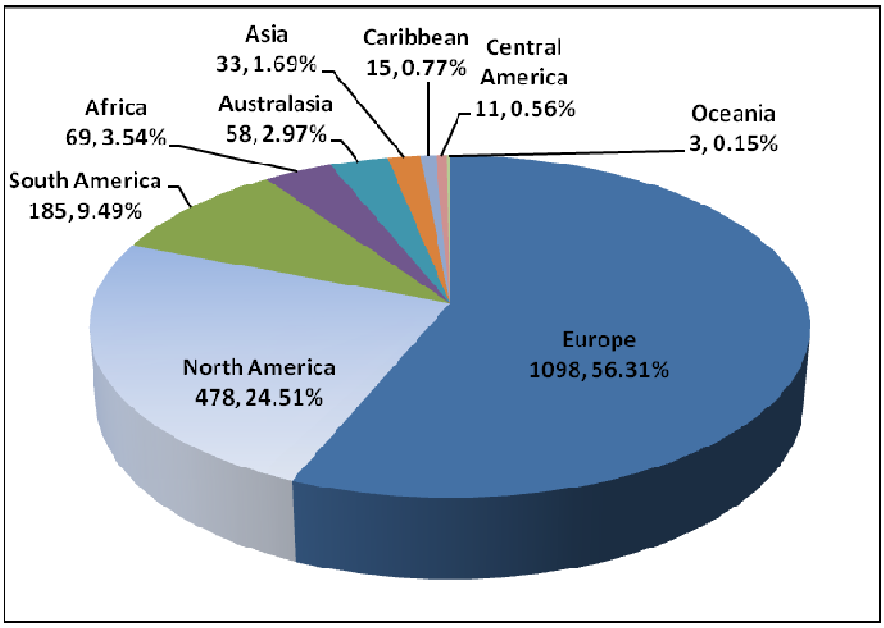

Figure 2: Distribution of OA Repositories in Geographical Regions

(Source: OpenDOAR.org as on 28th June 2013)

3.0 Literature Review: Researchers' Perception and Awareness towards Open Access Publishing

Open access publishing is major thrust in scholarly communications process post 2000s. Many research surveys have been commissioned by the knowledge communities, OA publishers and scientific societies to understand researchers' perception, attitudes, acceptance, practices, awareness level and training needs. Majority of these surveys reveal that researchers in developing countries were not fully aware of OA principles, OA mandates of their national research funding agencies, OA publishing processes, OA publishing fee and OA licensing policies. However, some researchers, who had earlier experience in publishing in OA journals, had better understanding and awareness on OA publishing principles and processes. Table 8 briefly describes major OA studies carried out between 2006 and 2012. About 13 studies have been included in this Table, which also represents a geographical diversity. This Table also includes the Survey of Open Access Publishing (Project SOAP), funded by the European Commission under FP7, which is the largest survey ever undertaken on OA publishing. Maturity of surveyed authors and researchers should also be taken a point of consideration, when analysing the findings and results of these surveys. Level of maturity varies depending on authors' experience with OA publishing and self-archiving. OA publishing is a learning experience for the majority of researchers. While they use more OA resources for their current research work, they tend to publish in OA journals and self-archiving in OA repositories.

Table 8: Studies Related to Authors' Perception, Attitudes and Awareness toward Open Access Publishing

Study Reference	Research Design	Sample Size	Country/ Region Focus	Findings
Dallmeier-Tiessen, 2011	Online Survey (large scale)	38358	Global	The Project SOAP (Survey of OA Publishing) focussed on OA benefits, barriers and author's experience with OA publishing. Authors believed OA beneficial to scientific communities, but felt funding and journal quality were major barriers.
Nicholas, 2005	Online Survey	3787	Global	Survey assessed authors' knowledge and perception of publishing in OA journals. Authors were familiar with OA publishing, but concerned with content quality, fewer rejections, less choice to publish. Perceptions of authors also varied with geographic variations.
Creaser, 2010	Online Survey	3139	Europe	Survey focused on behaviours and attitudes of authors toward OA repositories. They had different level of understanding and motivations in self-archiving, based on authors' disciplines.
JISC, 2008	Online Survey	713	Europe (Biomedical researchers)	Survey focused on OA publication charges. Respondents felt fewer funds available for APC due to inadequate or absence of OA mandates of funding agencies.
Schroter, 2006	Online Survey	468	Global (authors publishing in BMJ journals)	Survey assessed authors' knowledge and perception of author-pays model in OA journals. Majority of authors were not familiar with OA publishing and not ready to contribute to OA journals operating under author-pays model.
Sanchez-Tarrago, 2009	Online Survey	160	Cuba	Survey focused on researchers' awareness, attitudes toward OA publishing and self-archiving. Majority of researchers were not familiar with OA principles and OA initiatives in the region or country. They agreed in self-archiving and publishing in OA journals if institutional or national policy changes.
Abrizah, 2009	Online Survey	131	Malaysia	Survey focused on knowledge and perception of faculty toward OA repositories. They had different levels of awareness, understanding and participation in self-archiving of published and unpublished papers in institutional and disciplinary

				repositories.
DeBeer, 2005	Online & Offline Survey	112	South Africa	Study focused on researchers' behaviours and attitudes toward OA publishing and self-archiving. These were just introduced globally and researchers had very limited exposure and they unheard of OA. They considered free availability of research literature would improve usage of OA resources.
Hernandez-Borges, 2006	Online Survey	100	Spain	Survey focused on authors' awareness and attitudes toward OA publishing and author-pays model. Majority of authors were not aware of OA principles and OA mandate of funders. Lack of funds and uncertain journal rating were the major barriers for them to publish in OA journals.
Gul, 2009	Offline Survey	84	India (Univ. of Kashmir)	Survey focused on researchers' awareness, attitudes toward OA publishing and use of OA resources. Majority of researchers were familiar with OA resources and actively considering submission in OA journals and OA repositories.
Lercher, 2008	Online & Offline Survey	72	United States	Survey focused on behaviours and attitudes of faculty at Louisiana State University toward OA repositories. They had experience in self-archiving published and unpublished papers in institutional and disciplinary repositories.
Schroter, 2006	Interview	29	United States, United Kingdom, Europe, Australia	Study assessed authors' knowledge and perception of publishing in OA journals. Authors were familiar with OA publishing, but not keen on the author pays model.
Xia, 2010	Literature Survey	26	Global	Study was based on analysing 26 surveys. Study focused on behaviours and attitudes of authors toward OA publishing. It observed increasing awareness and submission rates, but authors concerned with prestige and lack of peer-review in OA journals.
Warlick, 2007	Interview	14	United States	Study focused on authors' behaviours and attitudes toward OA journals. They considered impact factor, OA mandate of funders, nature of audience & cost of publishing are deciding factors for considering publishing in OA journals.

4.0 Literature Review: Librarians' Perceptions, Awareness and Skills Requirement towards Open Access Development

Global open access movement started with the establishment of SPARC (Scholarly Publishing and Academic Resources Coalition) by the Association of Research Libraries, USA (ARL) in 1997. SPARC spearheaded the global open access movement involving library associations of many developed and developing nations. Librarians have been engaged in advocacy, awareness raising and sensitizing of stakeholders on open access resources at different academic libraries. They also have similar experiences while implementing information and media literacy programmes for various stakeholders for increasing optimal usage of library resources. In OA advocacy and sensitization role, librarians got engaged with all stakeholders including policymakers, researchers, authors and research funding agencies. Since signing or supporting the open access statements and declarations at the global and regional level, different funding agencies also have started announcing their own open access mandates. Some of the major global Open Access Statements and Declarations are listed below, which also got wide supports from global library associations:

- Budapest Open Access Initiative, launched by the Open Society Institute, 14th February 2002.
- Bethesda Statement on Open Access Publishing, 20th June 2003.
- Scientific Publishing: A Position Statement in support of Open Access Publishing, released by Wellcome Trust, UK, on 1st October 2003.
- Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities, released by the Max Planck Society and European Cultural Heritage Online, on 22nd October 2003.
- MLA Statement on Open Access, released by Medical Library Association USA, 7th October 2003.
- IFLA Statement on Open Access to Scholarly Literature and Research Documentation, released by International Federation of Library Associations and Institutions (IFLA), 5th December 2003.
- SLA Statement Regarding Open Access, released by Special Libraries Association (SLA), 5th June 2004.

In the last two decades roles of librarians have been changed significantly not only in the developed countries but also in developing nations. Rapid development in library technologies and ICT applications, roles of librarians are redefined and refreshed in almost every alternative year. While more specialized and advanced roles are defined where librarians are involved in managing open access projects such as OA publishing, institutional repositories, metadata harvesting services, digital archiving, creating open educational resources, open data. Apart from technical involvement in open access projects, librarians are also involved in OA advocacy, awareness raising and sensitization of stakeholders (including authors, researchers, users, administrators, faculty members, and policymakers.), outreaching the internal and external audiences, content creation for media outreach, content creation for OA resources and so on. While managing Green Open Access channels, librarians confront with copyright

issues such as journal publishers' posting policies, embargo period as set by publishers, etc. For allowing posting papers in their OA repositories, appropriate judgment is required in order to avoid copyright infringement. Open licensing is also directly linked to OA resources. Thus, present-day surveys of roles of librarians now focus on soft skills of librarians, whereas a decade earlier main focus was on technical skills of librarians for managing new OA technologies and tools.

Some studies pointed out that, establishing OA institutional knowledge repositories became priority to the librarians across the country since the first set of OA repositories become operational.

A number of papers published that discussed awareness, attitudes, perception of library and information professionals in open access to knowledge. Some of the papers also discussed open access training needs of librarians and mapping of OA and IR skills. More focus literature on librarians' perception and training needs are briefly described next in alphabetical order of author:

Bailey (2005) discusses role of reference librarians in institutional repositories (IRs). In this paper author identified ten potential IR support activities for reference librarians.

Chan, Kwok and Yip (2005) discuss role of librarians in managing services related to OA repository, based on a study of university librarians in Hong Kong.

Harris (2012) gives a general overview of role of academic libraries in open access world and suggests some points of action for future development in OA. He further suggests six key skills and capabilities that librarians require for OA world, which are namely (i) Communication; (ii) Relationships; (iii) Tools; (iv) Metadata and the web-scale; (v) Working together and sharing; (vi) Other challenges.

InTech Croatia (2012) surveyed librarians and enumerated changing roles of librarians in open access development around the world. Some of their findings are: (a) Librarians believe that they have a better awareness and understanding of OA than their authors and reader communities. (b) They are engage in planning and implementation of OA repositories, i.e., Green OA channels. (c) They are more involved in promoting and advocating Green OA than Gold OA channels.

Okoye (2011) reveals, based on his field survey in Nigeria, that majority of librarians were aware of OA world but few had published papers in OA journals or on OA topics.

Palmer, Dill and Christie (2009) indicate that academic librarians are more comfortable with traditional responsibilities such as educating others on open access environment. This paper was based on findings of a survey on academic librarians' attitudes toward open access principles and related behaviours, with inputs from academic librarians in the United States.

Partridge, Lee and Munro (2010) discuss role of librarians in library 2.0 environment. In the context of this paper Librarian 2.0 as open access evangelist, their role can be redefined as: (a) Librarian 2.0 is more focused on collaboration, interaction and continuous enrichment of knowledge. (b) Attitudes of Librarian 2.0 must be to take challenges and innovative ways to find solutions in non-conventional or unexplored paths. (c) Technical skills are as much important as advocacy and motivational skills. (d) Librarian 2.0 builds symbiotic relationships with

stakeholders including institutional policymakers, editorial board members of different OA journals, OA authors, and researchers in public-funded research (within their institutions). (e) Librarian 2.0 is well-versed with OA mandates of grant agencies, knowledge of OA development in researchers' disciplines. (f) Librarian 2.0 is well-versed with Creative Commons licenses, copyright and copyleft issues, embargo period of subscription-based journals for self-archiving.

Sharma, Saha and Meichieo (2008) discuss skills requirements for successful implementation of institutional repositories in Indian institutions. In this paper, authors describe technical and managerial skills required for establishment of IRs using open source software applications.

Simons and Richardson (2012) discuss new roles, new responsibilities and training needs of repository staff. This discussion is based on findings of a survey of staff working in universities in Australia and New Zealand. They categorize repository staff and based on type of job, past and future training needs of the respondents were drawn.

SwetsBlog (2012) discusses the impact of OA on librarians. In this paper authors presented insights from librarian interviews, where two university librarians from University College London, UK (UCL) and University of North Carolina, USA (UNC) participated.

In a number of recent reports, commissioned by the global publishing industries, impacts of the Gold and Hybrid Open Access business models were analyzed in great details. These reports recognized new role academic librarians in changing scenario of open access world. They also highlight the open access mandates of research funding agencies. They enumerate patterns of new collaboration or engagement for satisfying OA mandates of funding agencies, while making OA publishing a sustainable (profit making) sector for the commercial publishers.

- *Open Access: Market Size, Share, Forecast, and Trends,* by Outsell, Inc., USA, 2013.
- *Open Access – Broad Readership, High Impact: What Authors Need to Know and How They Can Benefit* – a White Paper*,* Springer, Germany, 2012.
- *Elsevier Editors' Update: Open Access Special Report* by Elsevier, the Netherlands, 2013.
- *Assessing the Role of Librarians in an Open Access World* by InTech, Croatia, 2012.
- *Moving towards an Open Access Future: the Role of Academic Libraries*, by Sage Publications in association with the British Library, 2012.

4.1 UNESCO's Interventions in Global Open Access Movement

UNESCO has been supporting global open access movement and advocating open access to knowledge to its member countries. UNESCO as an intergovernmental agency has been assuming key role in making member countries aware of open access development across the world. UNESCO became a keen observer of open access movement. In early 2000s, this OA movement achieved solid foundation and firm

root as they received strongest possible supports from many academic communities and research conglomerates such as Max Planc Institutes in Germany and Wellcome Trust in the United Kingdom. UNESCO also transformed its focus from universal access to information, or information for all to open access to knowledge and information.

- 2013: Launched *Open Access Policy Concerning UNESCO Publications*, for all publications released after 1st June 2013.
- 2012: Published *Policy Guidelines for the Development and Promotion of Open Access,* written by Alma Swan.
- 2012: Published *Directory of Open Access Education and Training Opportunities*, prepared by Shalini Urs, University of Mysore.
- 2011: Launched *Global Open Access Portal (GOAP)* on 2nd November 2011.
- 2011: Launched UNESCO Open Educational Resources (OER) Platform on 1st November 2011.
- 2011: Launched the *UNESCO/Commonwealth of Learning (COL) Guidelines on Open Educational Resources (OER) in Higher Education*, on 1st November 2011. UNESCO also publishes several reports and monographs on OER.
- 2011: Accepted in General Conference *Draft Strategy on UNESCO's Contribution to the Promotion of Open Access to Scientific Information and Research.*
- 2009: Launched *World Digital Library* on 21st April 2009.
- 2008: Published *Open Access to Knowledge and Information: Scholarly Literature and Digital Library Initiatives - the South Asian Scenario,* written by Anup Kumar Das and published by UNESCO New Delhi.
- 2008: Published *Science Dissemination using Open Access: A Compendium of Selected Literature on Open Access*, edited by E. Canessa and M. Zennaro and published by UNESCO's Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy.
- 2008: Published *Open Access – Opportunities and Challenges: A Handbook*, jointly published by European Commission & German Commission for UNESCO.
- 2007: Launched Open Training Platform (OTP).

5.0 Open Access in India: Scenario of an Emerging Economy including its OA Skills Building Initiatives

In India, the concepts of open access to scholarly literature got popularized in late 1990s by a number of institutions and professionals. Many capacity development programmes for skills building of library and information professionals were organized since then. Library professionals learned open source software applications used for creating open access repositories and OA journals, namely, DSpace, EPrints, Greenstone, and Open Journal System. A number of international conferences were organized that focused in open access development and building institutional repositories. These conferences also organized pre-conference tutorials for hands-on

training in open source software used for building OA repositories. Some of important international conferences that were held in series in India are namely:

- International Conferences on Digital Libraries (ICDL) in 2004, 2006 and 2010 organized by The Energy and Resources Institute (TERI), New Delhi.
- 4th International Conferences on Asian Digital Libraries 2001 (ICADL 2001), organized by University of Mysore and Indian Institute of Information Technology Bangalore (IIIT-B).

In last fifteen years, many national professional associations and library related institutions also organized their annual conferences with open access themes and sub-themes. These associations and institutions include Indian Library Association (ILA), Indian Association of Special Libraries and Information Centres (IASLIC), Society for the Advancement of Library and Information Science (SALIS), Society for Information Science (SIS), Medical Library Association of India (MLAI), Developing Library Network (DELNET), and Information and Library Network (INFLIBNET).

In these national and international conferences, library professionals presented their case studies of building institutional repositories using open source software. They also discussed different challenges they faced related to software implementation, workflow management, copyright issues, sensitization and advocacy of open access to different stakeholders including academic authors. In majority of cases we see much enthusiasm for creating of open access resources for the larger users' communities. A brief chronicle of some policy events associated with early open access development in India is listed below:

- National Knowledge Commission's recommendations in Open Access to public-funded research literature, 2007. These recommendations are based on submitted Report of the Working Group on Open Access and Open Educational Resources and sent to Prime Minister of India for implementation.
- UGC Regulations 2005 [UGC (Submission of Metadata and Full-text of Doctoral Theses in Electronic Format) Regulations, 2005]. Later it has been superseded by the UGC Notification 2009.
- UGC Notification 2009 [The UGC Notification (Minimum Standards & Procedure for Award of M.Phil. / Ph.D Degree, Regulation, 2009)]. This regulation mandates all theses and dissertations, submitted in Indian universities for the award of research degrees such as PhD, M.Phil., M.Tech and DM/MCh, to be made open access through ETD repositories at the national and university level.
- CSIR Open Access Mandate, 2011, released by the Council of Scientific and Industrial Research (CSIR). CSIR is a major funding body for public funded research in India. CSIR is also a major apex body for public funded research in scientific and technological disciplines.
- ICAR Open Access Mandate, 2013, released by the Indian Council of Agricultural Research (ICAR). ICAR is a major apex body for public funded research in agricultural disciplines.
- Shodhganga – a National OA Repository of Theses and Dissertations, established by INFLIBNET Centre in 2010. This repository aims at archiving theses and dissertations submitted in Indian universities by doctoral and other research students.

- Vidyanidhi, India's first OA ETD repository, established by University of Mysore in 2003. It received technical and financial supports from the Ford Foundation, Microsoft Corporation, National Information System for Science and Technology (NISSAT of Department for Scientific & Industrial Research, Government of India) and UNESCO.
- ShodhGangotri – a National OA Repository of Indian Research in Progress, established by INFLIBNET Centre in 2011.
- World largest and oldest disciplinary open access repository arXiv.org established a mirror site at Institute of Mathematical Sciences Chennai (IMSc) that boosts Indian researchers in self-archiving their research papers.
- EPrints@IISc India's first OA institutional repository established by National Centre for Scientific Information (NCSI) for research literature of Institute of Science (IISc Bangalore).
- A series of training of trainers (ToT) workshops, on building open access repositories using open source software DSpace and EPrints, organized across the country by national institutions in last 15 years. The institutions offered ToT workshops were National Centre for Science Information (NCSI) at IISc Bangalore; Documentation Research and Training Centre (DRTC) at Indian Statistical Institute Bangalore, M.S. Swaminathan Research Foundation (MSSRF), Indian Institute of Management Kozhikode (IIMK), National Institute of Science Communication and Information Resources (NISCAIR), Developing Library Network (DELNET), and National Informatics Centre (NIC). These workshops helped in successful implementation of OA repositories across the South Asian region. Many of these repositories are listed in OpenDOAR (Directory of Open Access Repositories) and ROAR (Registry of Open Access Repositories). These ToT workshops also helped capacity development of teachers in library schools. Many library schools in South Asia have now included course module on OA repositories in their graduate curricula.
- IMARK online training module "Digitization and Digital Libraries", developed by NCSI. Later this module merged with "Digital Libraries, Repositories and Documents".

Recently an empirical study was undertaken in June-July 2013 for researchers of Jawaharlal Nehru University (JNU), India using an online survey tool. The objectives of this survey were to identify open access perceptions, awareness and practices of JNU researchers. Findings of this survey are available with this report (Annex II).

6.0 Open Access Curriculum for Researchers and Library and Information Professionals

A number of studies have been carried out in recent time for determining researchers' and librarians' perception, attitudes and awareness towards open access publishing. Another set of studies also carried out for determining their training needs and types of skills required for improving open access content creation and utilization. Some of the important publications are analyzed in the former sections of this paper for determining their level of understanding, attitudes and training needs. Another empirical study was undertaken for researchers in Jawaharlal Nehru University (JNU), India using an online survey tool. Findings of this survey are now available with this report.

Majority of the study reports have recommended educating researchers and librarians in different aspects of open access to scholarly literature. There is also an urgent

necessity for development of appropriate training modules for awareness raising and guiding researchers in open access publishing as well as open access literature utilization. These training courses should be designed to be delivered to the global communities of researchers and librarians, thus, preferably will be freely available online as well as offline modes. However, a user registration will be required to know progress of registered users and online course administrators will help them in completing these online courses.

A number of online self-directed training courses in different subject areas are freely available for educating global communities. Two of most successful free online courses are described below for as a model for development of OA self-directed training courses:

1. ***IMARK (Information Management Resource Kit)*:** IMARK is a comprehensive suite of distance learning resources for information management and exchange. IMARK is spearheaded by FAO (Food and Agriculture Organization of the United Nations) and supported by over 30 partner and contributing organizations including UNESCO and Commonwealth of Learning. IMARK presently offers seven online training modules, namely: (i) Social Media for Development, (ii) Strategic Approaches to Information, (iii) Management of Spatial Information, (iv) Knowledge Sharing for Development, (v) Digital Libraries, Repositories and Documents, (vi) Networking in Support of Development, and (vii) Building Electronic Communities and Networks. These modules are freely available to the registered users and also available on CD-ROMs. It also has several language options. Many information professionals, development practitioners and agricultural extension workers have enrolled in these modules for learning different dimensions of information access and communication of information. Their online as well as offline delivery models are very effective and user-friendly for targeting learners in developing countries.
2. ***General Course on Intellectual Property (DL-101)***: This online distance learning course is offered by the WIPO Worldwide Academy. This course is freely available to any interested person across the world. It is delivered twice in a year to the enrolled students. It also has several language options. After completion of the learning modules, an online test is arranged, if a student successfully pass the DL-101 final examination, s/he is awarded an electronic certificate of course completion. WIPO Worldwide Academy also offers few other online courses in different aspects of IPR, with an subsidized enrolment fee for participants from developing countries.

Recently a Delphi study titled “Towards Open Access Curriculum for Researchers and Library and Information Professionals” was undertaken by the CEMCA/ Commonwealth of Learning for identifying curricula and its different modules for a self-directed learning (SDL) course in Open Access.

Findings of this study are available with this report (Annex I). This study suggests following three modules to be incorporated in SDL course on Open Access:

Module 1: Foundations

1. Introduction to Open Access: Definition, types (green, gold, delayed), OA journals (gold and hybrid), OA books, OA repositories, benefits, barriers (publisher resistance), philosophy of access to knowledge, disciplinary trends; Open Access Policy development, including funder policies
2. Copyrights and licensing mechanisms for Open Access, such as the creative commons licenses, copyleft and publishers' embargo in self-archiving

Module 2: Practical Options and Systems

3. Repositories and issues involved in creating and maintaining repositories, author self-archiving
4. Open Access Journal publishing systems and processes

Module 3: Initiatives, Implications and Issues

5. Searching of Open Access information (Vehicles for Open Access: OAIster and other Open Access Search Engines, PubMed), Metadata related issues, SHERPA RoMEO, DOAJ, DOAB, GOAP, OA Map, etc.
6. Impact of Open Access on dissemination of knowledge, citation advantages, estimating impact; Changing practices in scholarly communication, including open peer review, emerging approaches to recognition of scholarly works
7. Implications of online-only format for long-term preservation of OA content (Google Books, Internet Archive, Hathi Trust, other non-U.S. large initiatives)

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Annex I

TOWARDS OPEN ACCESS CURRICULUM FOR RESEARCHERS AND LIBRARY AND INFORMATION PROFESSIONALS

Prepared for

Commonwealth Educational Media Centre for Asia (CEMCA)

and

UNESCO

by

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July 2013 **New Delhi, India**

Towards Open Access Curriculum for Researchers and Library and Information Professionals

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Towards Open Access Curriculum for Researchers and Library and Information Professionals

1.0 Background

Library and information professionals are one of the important stakeholders in the growth and development of the Open Access movement. As the importance of Open Access grows, the amount of information generated in this area and the developments in new technologies, initiatives and projects warrants that a specialized course on Open Access is included in the broader curricula of Library and Information Science Schools. In order to understand the landscape a desktop study was commissioned in 2011 to develop a "Directory of Open Access Education and Training Opportunities"[1]. The report prepared by Professor Shalini Urs indicated that there is limited formal pre-service training available around the world. While components of scholarly communication and digital libraries courses do cover some basics related to Open Access, it would be useful to develop a basic standard curriculum at the graduate level that can be adopted/ adapted by Library and Information Science schools around the world. This will also help the library and information professionals to adapt to new technologies and developments and build capacities to promote Open Access to scientific information and research. The Open Access Forum 2011 organised at the UNESCO Headquarters in November 2011 also appreciated the importance of developing relevant curricula not only for librarians, but also for young research scholars. The experts emphasized that Open Access should be introduced to young research scholars, and that will go a long way in promoting Open Access[2]. Keeping this in mind, in the first phase, the present Delphi study was designed to develop an outline of the curriculum for a graduate level course in Open Access.

2.0 Methodology

As part of the Delphi[3] study methodology, a group of 122 experts who have written three or more papers related to Open Access were identified from the Bibliography developed by Charles W. Bailey, Jr. entitled "Transforming Scholarly Publishing though Open Access: A Bibliography"[4] (2010). Using identified email we asked these experts to identify only 10 topics that they think important to be included in a graduate level course on Open Access for librarians. Nineteen emails bounced back reducing the delivery of emails to 103 experts. Only 18 experts responded to the phase one of the study conducted using a Google Form. Thus, the response rate is about 14%, which is very low. But, those who have responded to the survey are mostly who's who is the area of Open Access and the response can be safely considered valid and reliable. These 18 experts were then followed up in phase 2 of the study using Google Form to develop a more refined list of topics based on the Content Validity Ratio (CVR) formula by Lawshe[5] (1975). Only 14 experts responded this time, further reducing the size of the expert group. The CVR is a method for assessing agreement among experts regarding how essential a particular item/topic is. The experts were asked to rate the sixteen

[1] See http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/pdf/UNESCO-OA-ET-Report-WithAppendix-final-Urs.pdf

[2] See http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/pdf/OAF2011_Report.pdf

[3] See http://is.njit.edu/pubs/delphibook/delphibook.pdf

[4] http://digital-scholarship.org/tsp/transforming.htm

[5] Lawshe, C. H. (1975), A Quantitative approach to content validity. *Personnel Psychology*, 28: 563–575. doi: 10.1111/j.1744-6570.1975.tb01393.x

topic groups as "it is essential" (3), "it is useful, but not necessary" (2), and "it is not necessary (1) to develop CVR. The minimum value of the CVR to ensure that agreement is unlikely to be due to chance for the expert group of 14 is 0.51[6].

3.0 Results

In the phase one of the Delphi study resulted in 16 broad thematic areas, which are presented below, with number of times in parentheses.

Phase 1

1. Introduction to Open Access: Definition, types (green, gold, delayed), OA journals (gold and hybrid), OA books, OA repositories, benefits, barriers (publisher resistance), philosophy of access to knowledge, disciplinary trends (23)
2. Copyrights and licensing mechanisms for Open Access, such as the creative commons licenses (17)
3. Issues in scholarly/academic (online) publishing/communication (including peer review) and library support for Open Access journals, open peer review, publishing ecosystem (15)
4. Repositories and issues involved in creating and maintaining repositories, author self-archiving (14)
5. Open Access Policy development, including funder policies (11)
6. Models for funding Open Access -- business models, support to researchers (COPE) (10)
7. Historical development (including digitization and Internet) of Open Access and serial pricing crisis (10)
8. Impact of Open Access on dissemination of knowledge, citation advantages, estimating impact (9)
9. Major Open Access initiatives (GOAP, OA map, etc), status of OA around the world, organizations supporting OA, role of publishers, strategies to promote OA (9)
10. Open Access Journal publishing systems and processes(8)
11. Software used for institutional repositories and journals, comparisons (8)
12. Research data management (including Open data and issues involved in making research data open), data mining, etc (7)
13. Ethical issues of Open Access (including biases), re-use of research results, plagiarism, ethics (7)
14. Searching of Open Access information (Vehicles for Open Access: OAIster and other Open Access Search Engines), Metadata related issues, SHERPA RoMEO, DOAJ, DOAB, etc. (6)
15. History of scholarly communication, and the Research Processes within the context of teaching and learning (use of Open Educational Resources) (6)
16. Implications of online-only format for long-term preservation of OA content (Google Books, Internet Archive, Hathi Trust, other non-U.S. large initiatives) (3)

[6] http://en.wikipedia.org/wiki/Content_validity

Phase 2

Table 1 reveals a very low level of consensus on the 16 topics/areas identified in the Phase 1 of the study. Only three topics/areas could receive the desired level of CVR indicating that these topics/areas are essential to be included in a graduate level course for library and information professionals. However, if we take the mean score of the responses within the range of 2.5 to 3.0 as indicator of "it is essential", eight out of the sixteen topics qualify to be included in the list of topics. The other eight topics/areas receive mean score within the range of 2.0 and 2.49, indicating that these topics are "useful, but not necessary" to be included in a graduate level course for library and information science professionals. Interesting to note that respondent experts think that teaching historical aspects of the Open Access movement and scholarly communication are not necessary. They also believe that teaching about software used in OA journals and repositories is also not important. This may be sue to then fact that there are several software to perform one activity, and a standard curriculum can't suggest to include one of these software, and none can perform all the activities needed by an organization for OA. One of the experts commented as follows, which is indicative of the growing acceptance of OA as an area of systematic study rather than to be treated as an area only for in-service and ad-hoc workshops/trainings:

> "Scholarly communication and open access are very broad topics, and becoming mainstream within academic libraries. Many of these topics may now be covered in other courses. I would argue that some of the basics about open access should be covered in introductory LIS courses, and in many places, this is probably the case. Scholarly communication is now (or should be) an integral part of collections management courses. One thought is that separate more focused courses may be advisable - some shorter, some longer. For example, institutional repository management may well be a course in itself, and the same is true of library publishing services."

Table 1: Mean Score and CVR Score for topics/areas

Areas/Topics	Mean Score	CVR
Introduction to Open Access: Definition, types (green, gold, delayed), OA journals, OA books, OA repositories, benefits, barriers (publisher resistance), philosophy of access to knowledge, disciplinary trends	3.0	1.0
Copyrights and licensing mechanisms for Open Access, such as the creative commons licenses	2.78	0.57
Repositories and issues involved in creating and maintaining repositories, author self-archiving	2.78	0.57
Open Access Policy development, including funder policies	2.64	0.28
Open Access Journal publishing systems and processes	2.57	0.14
Searching of Open Access information (Vehicles for Open Access: OAIster and other Open Access Search Engines), Metadata related issues, SHERPA RoMEO, DOAJ, DOAB, etc.	2.57	0.28
Impact of Open Access on dissemination of knowledge, citation advantages, estimating impact	2.5	0.14
Implications of online-only format for long-term preservation of OA content (Google Books, Internet Archive, Hathi Trust, other non-U.S. large initiatives)	2.5	0.14
Models for funding Open Access -- business models , support to researchers (COPE)	2.42	0
Major Open Access initiatives (GOAP, OA map, etc), status of OA around the world, organizations supporting OA, role of publishers, strategies to promote OA	2.38	-0.28
Issues in scholarly/academic (online) publishing/communication (including peer review) and library support for Open Access journals , open peer review, publishing ecosystem	2.28	-0.14
Ethical issues of Open Access (including biases), re-use of research results, plagiarism, ethics	2.23	-0.28
Software used for institutional repositories and journals, comparisons	2.21	-0.42
Research data management (including Open data and issues involved in making research data open), data mining, etc	2.21	-0.28
Historical development (including digitization and Internet) of Open Access and serial pricing crisis	2.14	-0.42
History of scholarly communication, and the Research Processes within the context of teaching and learning (use of Open Educational Resources)	2.07	-0.42

4.0 Outline of the Suggested Curriculum

Based on the results of the phase 2 of the Delphi study, the following topics can be identified as the core of the curriculum for library and information professionals as the graduate level.

Module 1: Foundations

1. Introduction to Open Access: Definition, types (green, gold, delayed), OA journals (gold and hybrid), OA books, OA repositories, benefits, barriers (publisher resistance), philosophy of access to knowledge, disciplinary trends; Open Access Policy development, including funder policies
2. Copyrights and licensing mechanisms for Open Access, such as the creative commons licenses, copyleft and publishers' embargo in self-archiving

Module 2: Practical Options and Systems

3. Repositories and issues involved in creating and maintaining repositories, author self-archiving
4. Open Access Journal publishing systems and processes

Module 3: Initiatives, Implications and Issues

5. Searching of Open Access information (Vehicles for Open Access: OAIster and other Open Access Search Engines, PubMed), Metadata related issues, SHERPA RoMEO, DOAJ, DOAB, GOAP, OA Map, etc.
6. Impact of Open Access on dissemination of knowledge, citation advantages, estimating impact; Changing practices in scholarly communication, including open peer review, emerging approaches to recognition of scholarly works
7. Implications of online-only format for long-term preservation of OA content (Google Books, Internet Archive, Hathi Trust, other non-U.S. large initiatives)

5.0 Next Steps

The curriculum outline developed as a result of this Delphi study is consensus opinion of a select group of experts who volunteered to participate in the study. While this is truly representative of the population, there is a need to go beyond statistics to be more inclusive and discuss the ideas further and work out a full grown curriculum that can be easily adapted to specific national and institutional situations. A fully developed curriculum will also help UNESCO to work on development of a Self-Directed Learning (SDL) course on Open Access. A good curriculum should exhibit the learning outcomes, content areas/topics to be covered, educational transaction issues, assessment of learning, and learning resources. Therefore, UNESCO should engage a curriculum development expert in the field of library and information science and Open Access to prepare a detailed elaboration of the topic outline for discussion in one or two expert validation meeting. The curriculum so finalized can be widely circulated through the web and in print to encourage library and information science schools around the world to adopt the same. Pedagogical transaction workshop for the course may also be organised for some interested institutions. Once the curriculum is finalized, the next step should be to develop the SDL course and release it in print and online. An online course can also be developed around the course to encourage Member State educational institutions to adopt the same online.

6.0 Project Outcomes

As a result of the rigour in the process of development of the curriculum and development of institutional capacities, the adoption of OA curriculum and course will increase resulting in wide visibility of UNESCO OA programme and its contribution to growth of Open Access in Member States as envisaged in the Open Access strategy[7] approved by the 36 General Conference.

[7] See http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/images/GOAP/OAF2011/213342e.pdf

Annex II

OPEN ACCESS AWARENESS AND PRACTICES OF JNU RESEARCHERS: REPORT OF A BASELINE SURVEY

Prepared for

Commonwealth Educational Media Centre for Asia (CEMCA)

and

UNESCO

by

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July 2013 **New Delhi, India**

Open Access Awareness and Practices of JNU Researchers: A Report of Baseline Survey

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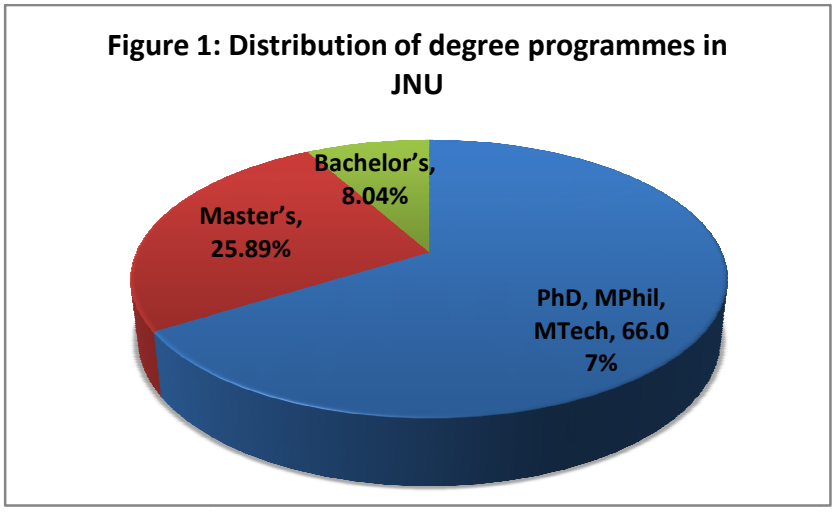
Open Access Awareness and Practices of JNU Researchers: A Report of Baseline Survey

1.0 Introduction

Jawaharlal Nehru University (JNU) is India's leading research university. It is one of the oldest central universities in India, fully funded by the national government. It is ranked higher than many conventional universities in India. Recently, Careers360 magazine published a list of Top 100 Universities in India 2013, based on analysis of published research literature in the referred journals of the last ten years, which are indexed in two international databases namely Web of Science and Scopus. As per this list, JNU is amongst India's best research universities and ranked 23rdout of total 694 universities considered for the Careers360 university rating [Careers360, 2013].

Latest JNU Prospectus 2013-14 indicates that JNU presently offers research degree programmes in 74 subject fields that include integrated M.Phil/PhD and M.Tech/PhD programmes [JNU, 2013]. JNU also offers master's degree programmes in 29 subject fields and bachelor's programmes in 9 subject fields. Figure 1 shows distribution of degree programmes in JNU, where research degree programmes are predominant with about 66% overall share. As indicated in the Figure 1, research programmes are main focus in the overall enrolment. JNU attracts bright students from different states of India. Students are selected through all India entrance examination with examination centres located across the country. This makes JNU a national research university in bigger sense. Students' enrolment is also having similar pattern with number of students in research degrees stands highest, followed by master's students and bachelor's students respectively.



JNU is one of the prominent contributing institutions in India in open access literature. Many of the JNU researchers and faculty members have contributed in open access journals such as much popular PLoS and BMC Journals. While searching MEDLINE database through PubMed gateway (www.ncbi.nlm.nih.gov/pubmed) on 11th July 2013 for identifying JNU's contribution in open access journals, we found following interesting figures as indicated in Table 1.

Table 1: Open Access Biomedical Literature Originated from JNU during 1998-2012

Range Years	All Articles	OA Articles	Ratio of OA Contribution
2008-2012	538	165	30.67%
2003-2007	388	91	23.45%
1998-2002	282	49	17.38%

JNU's researchers in biomedical disciplines have been progressively increased ratio of publishing in open access journals. Based on our search query "affiliation=Jawaharlal Nehru University" in PubMed database for last fifteen years period in five-years intervals, we found that JNU researchers published 538 papers during 2008-2012, 388 papers during 2003-2007 and 282 papers during 1998-2002 period. Further limiting to "free full-text available" category that mainly denotes open access articles, we found that JNU's researchers contributed 165 papers during 2008-2012, 91 papers during 2003-2007 and 49 papers during 1998-2002 in open access journals. JNU achieved 30.67% contribution in open access literature in last five years period out of its total contribution in the same period. This is progressively higher than open access contributions respectively 23.45% during 2003-2007and 17.38% during 1998-2002 periods. This is remarkable achievement in terms of progressively increased contributions in open access literature over period of time. Similar to biomedical subject areas, JNU researchers in other subject areas also have contributed to open access journals in last fifteen years and increasingly improving its visibility in global research platforms.

Since 2012, JNU has been regularly organizing *Authors' Workshops: How to Write for and Get Published in Scientific Journals* for its researchers and students. The training and awareness raising workshops focused on getting published in international peer-reviewed journals. Between August 2012 and February 2013, JNU in collaboration with academic journal publishers organized five authors' workshops, participated by more than 500 researchers and students. A number of editors of high impact factor journals came to assist prospective authors in clearing their doubts in publishing high quality journal papers. Many enrolled research students at PhD, M.Phil. and M.Tech. level participated in these events in order to understand article submission process, peer-reviewing process, addressing comments of reviewers, etc.

A two-day Workshop on Scientific Writing and Bioethics was also held in September 2012 at School of Life Sciences in JNU, coordinated by a group of PhD students in science schools. Here senior award winning scientists from reputed Indian institutions presented their experiences in communicating science in top-tier journals in different scientific subject fields. These speakers also hold senior editorial positions in different academic journals. Apart from guiding researchers in writing scientific papers, some speakers also touched upon the ethical principles, standards and guidelines in publishing particularly while research themes deal with human subjects, personal liberty and privacy. They also gave examples of retraction of published papers from reputed journals due to authors' undeclared conflict of interests, plagiarism, furnishing false or fabricated results and compromising code of ethics in biomedical research. Speakers also gave anecdotes of papers which had received great media attention while breaking the conventional wisdom or steering up controversies. These papers receive good amount of citations in the process.

During 2012-13, JNU Central Library organized three international workshops for promoting and awareness raising of open access resources available in open data portals, open access knowledge repositories and ETD archives. These events are namely: JNU-World Bank Workshop on Open Data and Open Development (9thMay 2013); JNU-Purdue University International Workshop on "Data Curation in the University: Libraries, Research, and Learning" (25thMarch 2013) and JNU-INFLIBNET Workshop on "Development of Institutional Repository using DSpace with Special Reference to Creation of ETD Archive" (23-27 July 2012). More than 100 researchers from JNU participated in these three workshops. Librarians and researchers of other academic institutions also participated in these workshops for getting familiar with open access resources and related initiatives.

With this background, we undertook a research study to determine level of understanding of open access, participation in open access knowledge creation and training needs of researchers attached with Jawaharlal Nehru University in India.

2.0 Research Questions

Based on the situation examined above, the following three hypotheses for the survey and four open-ended research questions to guide the survey were proposed.

Hypotheses

H1: Many if not most researchers have a limited understanding of open access publishing and therefore will make little use of open access resources.

H2: Increased use of OA resources will determine increased contributions and creation of OA research literature by the researchers.

H3: Effective OA mandate, appropriate OA policies of public funded research and OA advocacy are more likely to contribute to OA knowledge creation.

Research Questions (RQs):

RQ1: How important is open access as preferred mode of scholarly communication to the researchers in JNU?

RQ2: To what extent they are engaged with scholarly communications vis-à-vis open access communications?

RQ3: Do they maintain their research profile in academic social networking sites with full-text contents of their published or un-published works?

RQ4: Which awareness raising or training tools do they avail during their period of academic research in JNU?

2.1 Methodology

This study was based on data collected from researchers enrolled in Jawaharlal Nehru University at New Delhi. For this study, an online questionnaire was prepared with 35 pre-defined close-ended multiple-choice items and one open-ended item for identifying researchers' involvement in scholarly communication processes, their open access perceptions, understanding and participation. The online questionnaire was prepared using Google Forms utility available with Google.com.

We sent this questionnaire titled "Survey on Open Access Awareness and Practices for JNU Researchers" to two email-based discussion forums, namely CSSP Discussion Forum and JNU Forum for Mutual Learning (JNUFML). Both mailing lists primarily belong to researchers attached to different schools and centres of JNU. While CSSP Discussion Forum has major participation of social science researchers, JNUFML has participation of researchers from all major disciplines as well as inter-disciplinary, multi-disciplinary and trans-disciplinary areas. These forums also have participation of former students of JNU. Together, these two forums have about 600 members in their mailing lists. These two forums are only known email-based discussion forums where current researchers are actively involved in sharing information, public policy debates, distributing calls for papers, calls for research proposals, calls for nominations for awards, getting feedback in working papers and similar academic discourses. We thought that these two forums would be the right avenue for getting responses from current JNU researchers. We posted this call for participation in online survey on 31st May 2013 to the email-based forums. We also re-circulated this online survey form through Facebook pages of CSSP and personal contacts.

We received 50 responses from different disciplines and different schools of the university. About a month period was given for getting the responses from the researchers, after posting online survey form on 31st May 2013. We collected responses till 3rd July 2013. Out of 600 members of the mentioned-forums, about 50% members are current researchers and rest 50% members belong to a group of former research students of JNU, researchers in other institutions and JNU's academic staff members. In all, we estimated about 300 current research students of JNU received this call for participation through e-mail. In the call we also mentioned that only present students of JNU are eligible for participation in this online survey. Thus, we achieved about 16.67% response rate from about 300 eligible members. Those who have responded to the survey were available during the survey period which was conducted during semester break in the campus, while many others were busy in fieldwork and theses writing for their final submission. In some online surveys of researchers, surveyors achieved similar or smaller response rate [Abrizah, 2009]. Thus, present response can be safely considered valid and reliable.

In the questionnaire, some anecdotes were given for brief introduction to the open access concepts. The data collected were then tabulated using Open Office Calc spreadsheet application (equivalent to MS-Excel) for analysis. Google Forms also have its own data analytics. We also used this data analytics tool for analysis.

3.0 Findings and Discussion

Researchers' Profile

The questionnaire has different parts. In Part I of questionnaire, the questions 1 to 7 were asked to identify researchers' profile in terms of their subject discipline, research department, level of present study enrolment, number of years spent in academic research, availability of scholarship/ fellowship, and scholarship/ fellowship granting agency, if any.

As shown in Figure 2, majority of respondents belong to social sciences subject disciplines with 46% share, followed by science and technology with 18% share, and biomedical sciences with 14% share. Altogether, 40% researchers, participated in this survey, belong to scientific disciplines. This can be mentioned here that, research in social sciences (including international studies) in JNU has strong legacy and global recognition since the beginning of the university.

Figure 3 shows that 86% researchers have primary affiliation to Jawaharlal Nehru University while 14% researchers mentioned primary affiliation to institutions other than Jawaharlal Nehru University, namely, Indira Gandhi Institute of Development Research (IGIDR), Indian Institute of Foreign Trade (IIFT), Assam University Silchar (AUS), and Mudra Institute of Communication Ahmedabad (MICA). Here this can be mentioned that academic staffs of other academic institutions also get enrolled in JNU for pursuing doctoral programme. There is also possibility that a few respondents who did not mention JNU as primary affiliation, moved to mentioned institutions after completion of a degree course from JNU.

In JNU, academic programmes are offered in different academic Schools. Research centres or research departments belong to these Schools, based on their broad subject disciplines. The School of Social Sciences (SSS) has the largest number of research centres or research departments. SSS presently has 15 research centres, including four research programmes. Whereas, School of International Studies (SIS) and School of Language, Literature and Culture Studies (SLL&CS) both have the second largest number of research centres, which is presently 11 each. JNU also has four Special Centres, created for nurturing special research interests. Figure 4 indicates that majority of respondents belong to JNU's School of Social Sciences (SSS) with 52% share. Remaining 48% respondents respectively belong to School of Environmental Sciences (SES), School of Physical Sciences (SPS), School of International Studies (SIS), School of Arts & Aesthetics (SAA), School of Life Sciences (SLS), School of Computer and Systems Sciences (SC&SS), School of Language, Literature & Culture Studies (SLL&CS), School of Computational and Integrative Sciences (SCIS), Special Centre for Molecular Medicine (SCMM), and Special Centre for Sanskrit Studies (SCSS).

Figure 2: Distribution of respondents based on research disciplines

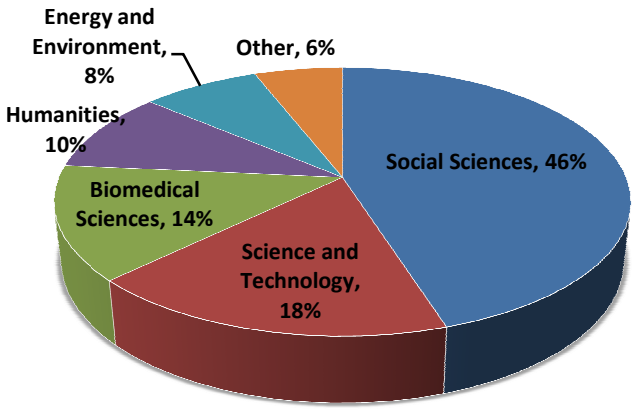


Figure 3: Respondents' Primary and Secondary Affiliation

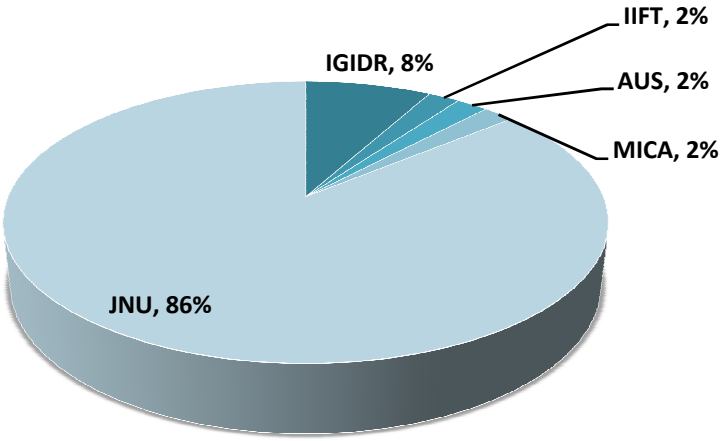


Figure 4: Distribution of respondents in Schools/ Faculties

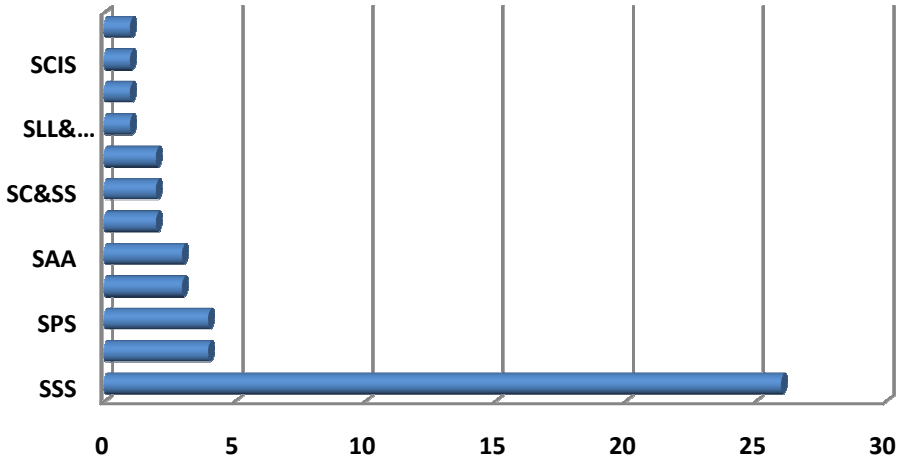
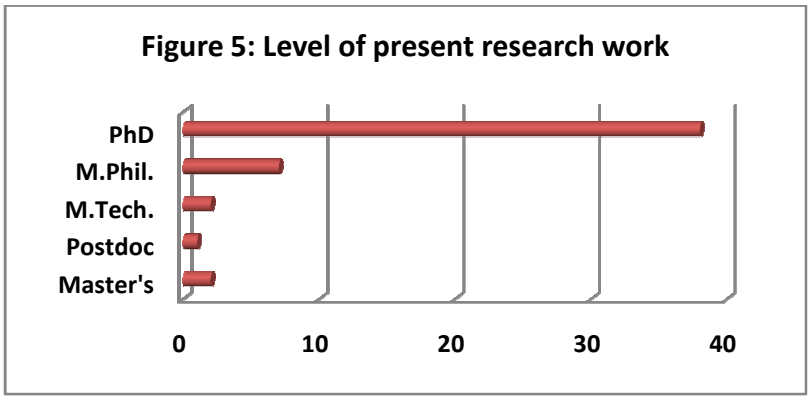
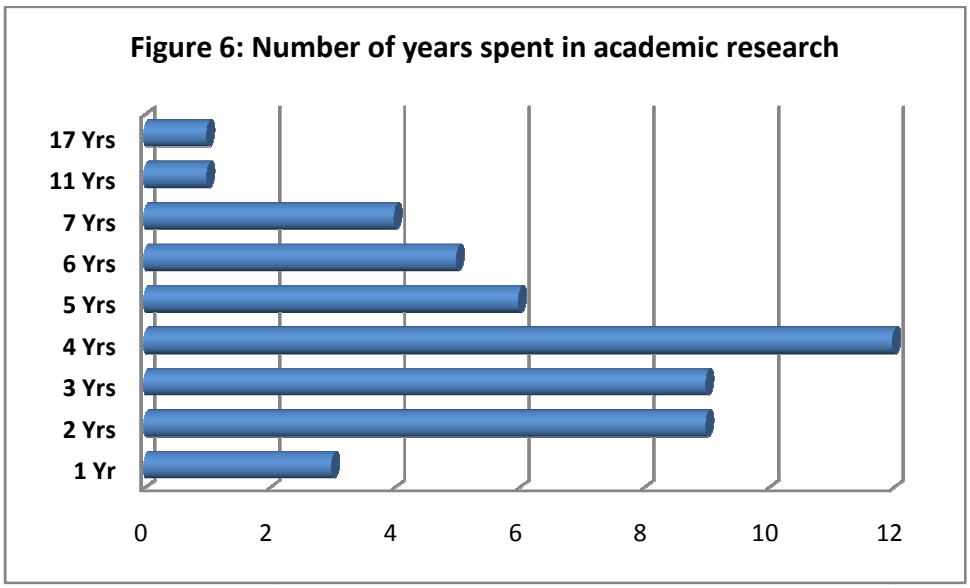


Figure 5 indicates that majority of respondents of this survey are PhD students with 76% share, while 14% respondents pursuing M.Phil. and 4% respondents M.Tech. programmes. Remaining respondents are at Postdoc, Master's and undergraduate level. This can be mentioned here that students are usually enrolled to PhD programmes after completion of M.Phil. or M.Tech. degree. Some students get enrolled to direct PhD programmes, who have significant published research work. Thus, PhD students with prior research experience already have publications in their credit. That makes them conversant with publication process in peer-reviewed journals. Figure 6 indicates number of years spent in academic research by respondents. It shows that highest number of respondents spent 4 years in academic research with 24% share, while 18% respondents spent 2 years and similar members spent 3 years in academic research. This Figure also indicates that a respondent spent 17 years in academic research including his/her time spent in prior research activities before joining in doctoral programme. Another respondent indicates his 11 years of association in academic research. About 6% respondents mentioned that they have spent only one year that means this is the first year of academic research while respondents participated in our survey. On an average, a respondent has spent about 5.44 years in academic research. In total, all respondents have spent about 272 man-years.





In response to question of whether they are receiving any fellowship, 78% respondents informed that they are receiving fellowship for pursuing their academic research, while 22% respondents are not receiving any fellowship from any grant agency. Figure 7 shows the respondents' status of fellowship holding.

Figure 8 shows names of different grant agencies and their share in providing fellowship to respondents. Figure 8 also indicates that the University Grants Commission (UGC) is major fellowship provider with 20% share. Other respondents are receiving fellowship respectively from the Council of Scientific and Industrial Research (CSIR) with 18% share, Rajiv Gandhi National Fellowship (RGNF of UGC) with 8% share, Indian Council of Medical Research (ICMR) with 6% share, JNU's special institutional fellowship with 12% share, Indian Council of Social Science Research (ICSSR) with 4% and other agencies with 16% share. Other agencies include Department of Biotechnology (DBT) and Indian Council of Historical Research (ICHR). All of these grant agencies are public funded. Thus, respondents receiving fellowship are engaged in public funded research, which is now worldwide focus for content creation in open access research literature.

Figure 7: Respondents' Status of Fellowship Holding

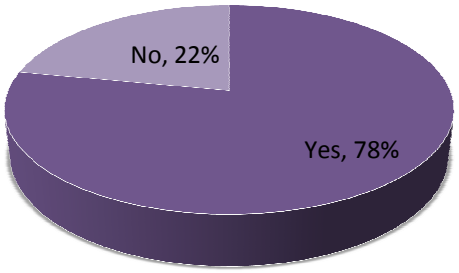
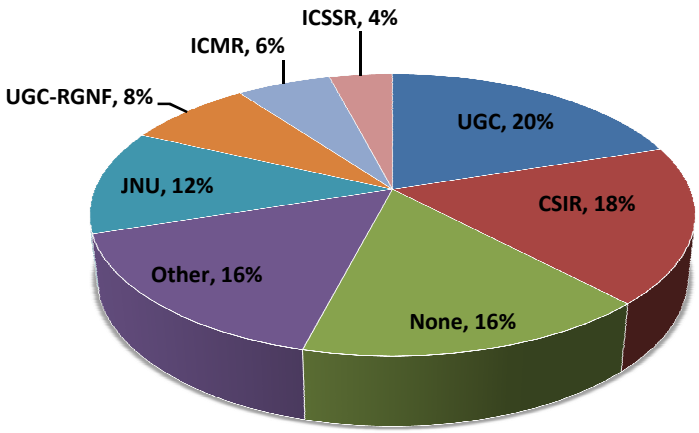


Figure 8: Funding agencies providing research fellowship to respondents



Researchers' Level of Awareness in Open Access

In India only few fellowship grant agencies have adopted open access mandate for increasing availability of public funded research outcomes to public domain through open access mode. Open access mandate of a funding agency allows archiving of a thesis or dissertation in an ETD repository, self-archiving scholar's research papers in open access repositories, and publishing research results in open access journals. In some countries, funding agencies also reimburse certain amount of article processing fee (APC) to authors for publishing in reputed open access journals. It is expected that Indian funding agencies will also consider funding APC to researchers.

In response to question whether respondents are aware of any open access mandate of their fellowship grant agencies, only 48% of respondents said yes and remaining 52% respondents are not aware of. This is also indicated in Figure 9.

Many of the fellowship grant agencies in India are supporting their institutional open access initiatives. For example, UGC has been promoting open access archiving of theses and dissertations at the university level as well as at the national level. UGC's INFLIBNET Centre has established an ETD repository, named Shodhganga@INFLIBNET at the national level for Indian universities. INFLIBNET Centre also created another open access repository, named "ShodhGangotri: Repository of Indian Research in Progress" for work-in-progress of registered doctoral theses in Indian universities. CSIR's National Institute of Science Communication and Information Resources (NISCAIR) publishes 17 open access peer-reviewed journals. ICMR also publishes its own open access peer-reviewed journal. Many national bodies are going to establish open access knowledge repository in their respective subject disciplines. CSIR has already established some institutional repositories. Creation of open educational resources (OER) and open data portal are also on the agenda of many national funding agencies. However, JNU presently does not have any open access institutional repository or ETD archive or open data portal. Some of the initiatives have been planned and will be implemented within a year or so.

In response to question related to their awareness on any open access initiative of their university or their fellowship grant agencies, only 44% of respondents said yes and remaining 56% respondents are not aware of. This is indicated in Figure 10. As JNU does not so far have any open access initiative, respondents' negative response could be anticipated.

Figure 9: Researchers ' awareness on open access mandate

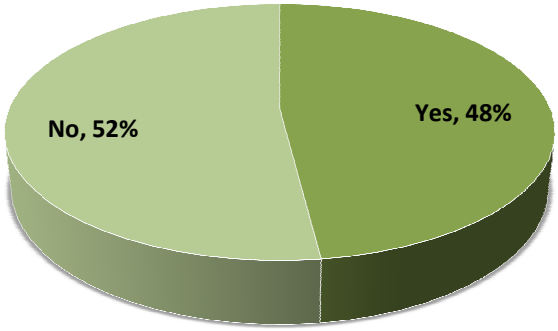
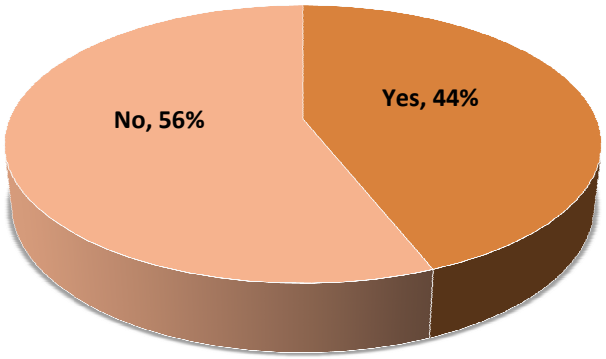


Figure 10: Researchers ' awareness on open access institutional initiatives



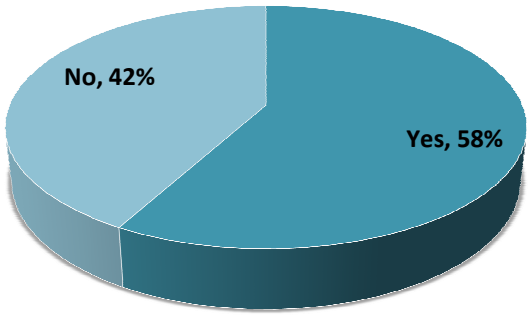
Level of Consumption to Open Access Resources

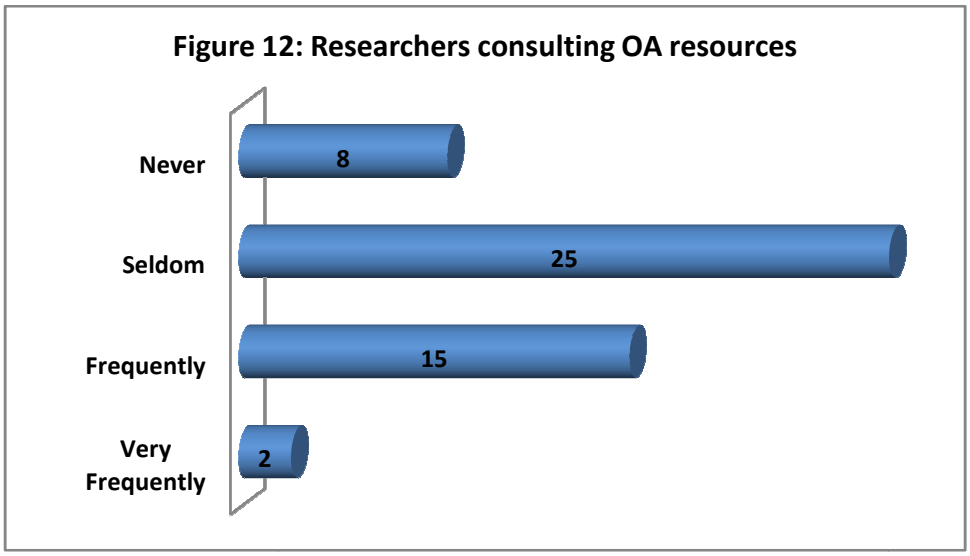
As shown in Table 1 earlier, many researchers have contributed to open access journals without fully knowing that these journals have already become open access. Peer-reviewed academic journals published by many public-funded institutions such as NISCAIR, Indian National Science Academy (INSA), Indian Academy of Sciences (IAS), etc. as well as scholarly societies have migrated to open access journal publishing, while continuing their print-subscription. These journals were alive even before the birth of new-age open access journals. They successfully made transition from publishing electronic journals then making them freely available in open access mode.

In response to question relating to respondents' access to open access journals, only 58% of respondents said they regularly access open access journals, while remaining 42% respondents do not regularly access as shown in Figure 11.

The next question was related to respondents' habitual access to all kind of open access resources such as open access journals, institutional repositories, subject-specific knowledge repositories, ETD repositories, OER, and open data portals. As shown in Figure 12 for their present research work, only 4% respondents indicated that they very frequently consult open access resources. About 30% respondents frequently consult open access resources, while 50% respondents seldom use and 16% respondents never use open access contents.

Figure 11: Researchers regularly access OA journals





Many e-journals as well as many university libraries provide Table of Contents (ToC) alert service to the registered researchers. ToC helps a researcher identifying articles of his/her interests and then s/he can read those identified articles. Researchers receive this ToC alert through emails and many social media such as Facebook, Twitter, RSS feed, as well as mailing lists. Users can themselves create ToC alerts for their preferred journals. They can also choose mode of delivery of ToC alerts, either through email or social media or RSS feed. Many of JNU researchers get ToC alerts directly from the publishers or journals' websites.

In response to question relating to whether they have subscribed to ToC alerts for their preferred journals, majority of respondents (58%) said no while only 42% respondents receive ToC alerts. The next question was relating to subscription to ToC alerts for any open access journal. Only 18% respondents receive ToC alerts for open access journals, while 82% respondents don't receive ToC alerts. As said earlier, ToC alerts help researcher in accessing most recently published research work in a particular field of his choice. Non-subscription to ToC alerts for open access journals may not lead to frequent access to open access contents.

Earlier, different modes of delivery of ToC alerts were mentioned. In response to question related to respondents' preferred choice of subscription to ToC alerts, majority of respondents informed that they receive it through emails (46%). As indicated in Figure 13, next popular modes respectively are social media (16%), mailing lists (12%) and least is RSS feeds (4%).

Contents of open access literature are accessible through many research gateways, literature search engines as well as subscription based bibliographic databases. Metadata harvesters or metadata aggregators of open access journals are also popular research gateways. Directory of Open Access Journals (DOAJ) indexes about 5000 open access journals at article level and contents of these journals are searchable through the DOAJ. As mentioned in Table 1, PubMed database also provides access to open access articles published in biomedical journals. Open J-Gate was another metadata aggregator of open access journals, and helped users in accessing contents published in periodicals in all major disciplines. However, Open J-Gate was suspended in 2012 by the owner of this service and similar product is now made available for subscribed users. Many libraries in the United States and Europe have metadata aggregators for accessing

open access contents. On the other hand, GoogleScholar has also emerged as popular search engine for scholarly literature search.

In the questionnaire we asked researchers about their experience in accessing open access literature using online gateways and search engines. Only 20% respondents indicated that they regularly use online research gateways and search engines, while 24% respondents don't regularly use them for accessing open access research literature. About 56% respondents are not aware of such services available for the researchers, as shown in Figure 14.

Figure 13: Preferred modes of receiving ToC alerts

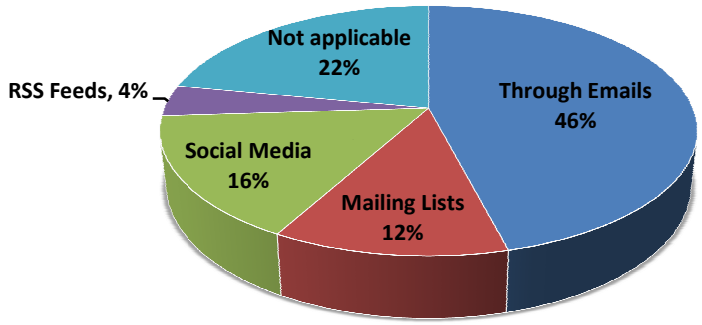
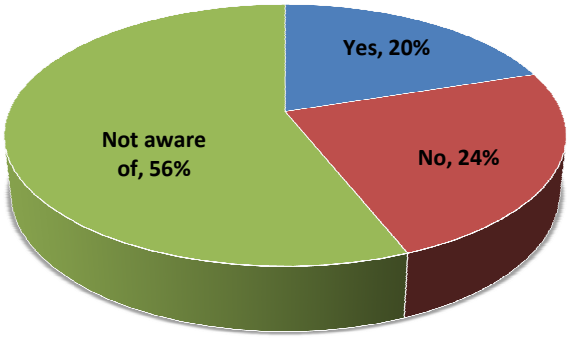


Figure 14: Researchers' awareness on OA online gateways for literature search



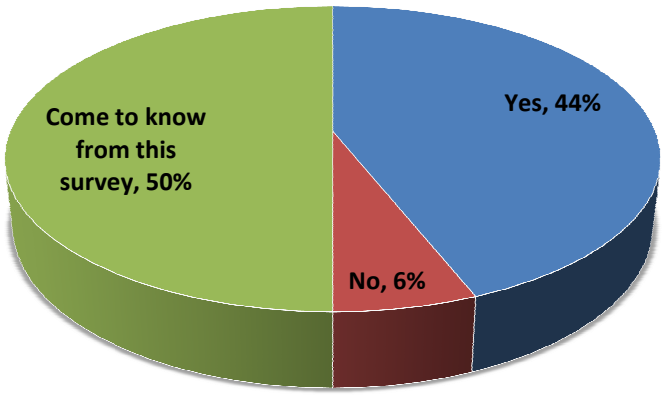
Open Access Publishing Choices, Publishing Experiences and Research Communication Practices

JNU's researchers, like many other researchers in India, have been exploring different avenues for publishing their results of research. They have choice of publishing in highly reputed peer-reviewed journals published by commercial publishers, while only privileged subscribers of those journals would only have access to full-text contents. Researchers also have choice of publishing in open access peer-reviewed journals while making their published results of research freely accessible to worldwide researcher communities. Very recently, many research funding agencies have accepted open access mandates for supporting open access to literature

originated from public-funded research. This gives way to establish Gold Open Access channel for publishing open access papers in subscription-based journals, where authors or funding agencies on behalf of authors pay an article processing charge (APC). Leading publishers of subscription-based journals, such as IEEE, Elsevier, Wiley, Springer, Oxford University Press, Sage and Emerald, all now have accepted Gold OA model for publishing open access articles in subscription-based journals. These publishers also maintain a few open access journals. There also APC is recovered from authors. Another mode, Green Open Access channel allows authors posting of their published journal papers in institutional repositories after a certain embargo period.

In response to a question, relating to whether they are aware of open access options available with the commercial publishers for publishing open access articles in either in subscription-based journals or open access journals published by those publishers, majority of respondents (50%) said they were not aware of such provision and came to know from this survey only. As indicated in Figure 15, about 44% respondents are aware of publishing in journals following Gold Open Access model, while only 6% respondents said they are not aware of.

Figure 15: Awareness on publishing in Green OA mode



In response to a question, relating to whether they have published any paper in peer-reviewed academic journals, as indicated in Figure 16 about 58% respondents said they have not published yet any paper in peer-reviewed journals, while 42% respondents already have papers published in peer-reviewed journals. In the follow up question, respondents informed that each one on average published 2.068 papers. About 26% respondents each one published 2 papers, 18% respondents published 1 paper, and 10% respondents published 3 papers. Maximum number achieved is 9 papers by a single respondent. Next question dealt with the kind of academic journals respondents opted for publishing their research work. Here options were 'print only', 'online only', and 'print plus online' journals. A 'print only' journal has no online edition; an 'online only' journal has no print edition; whereas a 'print plus online' journal has both the editions. Here majority of respondents (58%) indicated that they have published their papers in print plus online journals, while 24% respondents preferred print only journals and 6% respondents preferred online only journals.

Figure 16: Researchers published any paper in peer-reviewed journals

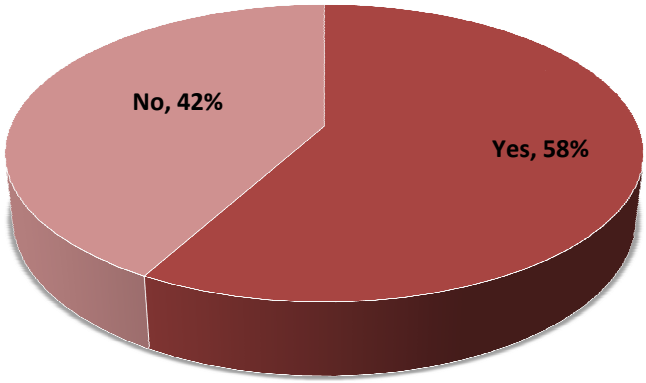
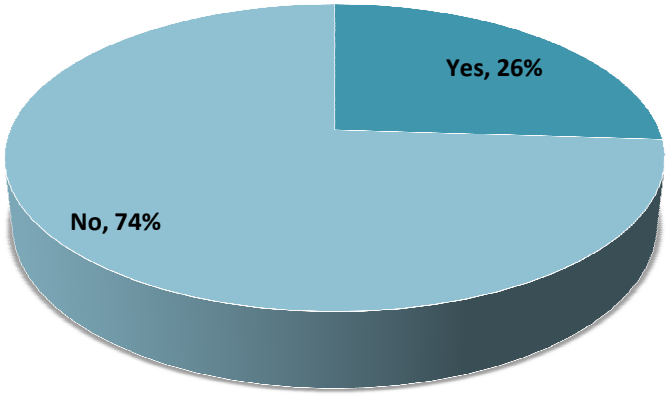
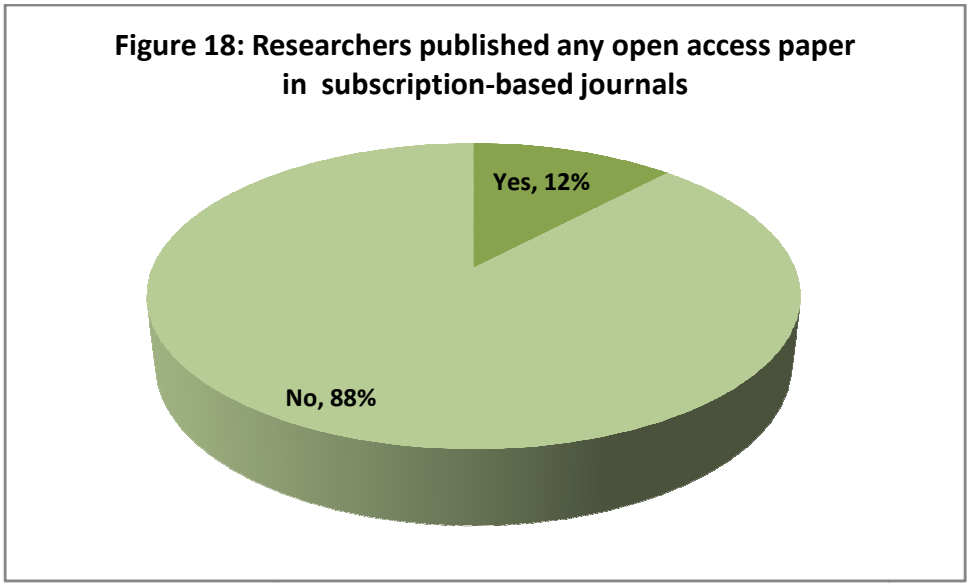


Figure 17: Researchers published any paper in open access peer-reviewed journals



In response to a question, relating to whether they have published any paper in open access peer-reviewed academic journals, as indicated in Figure 17 about 74% respondents said they have not published yet any paper in open access journals, while 26% respondents already have papers published in open access journals. In the follow up question, respondents informed that each one on average published 1.46 papers in open access journals. About 22% respondents each one published 1 open access paper. Another respondent contributed 3 open access papers. Maximum number achieved is 5 open access papers by a single respondent. Figures 16 and 17 also indicate that surveyed researchers seldom published in open access journals. However, their academic career have just taken off and they have promising career ahead where they will get more chance to publish their papers in reputed international journals.

In response to a question, relating to whether they have published any open access paper in subscription-based academic journal published by commercial publishers as indicated in Figure 18, about 88% respondents said that they have not published yet any open access paper in subscription-based journals, while 12% respondents already have open access papers published in this kind of journals. In the follow up question, only one respondent informed that s/he had actually paid an article processing fee (APC) for getting published open access papers in this kind of journal. Other 5 respondents, who contributed open access papers in subscription-based journals, said they have not paid any APC. In a follow-up question they also informed that research funding agencies did not pay any APC either for their open access papers. Probably that was a case of gratis from the publishers' end for increasing share of open access papers in subscription-based journals.



Academic researchers across the world communicate their results of research in proceedings of conferences and seminars, before publishing in peer-reviewed academic journals. They present their papers in the conferences and get enlightened with discussions and feedback from peer groups, senior and experienced researchers. Conferences also help the young researchers to get introduced to academic communities in their subject fields. Thus, JNU's researchers, like researchers of many other institutions, take interests in publishing conference papers and presenting their research findings in the conferences or seminars held within the country and even abroad.

In response to a question, relating to whether surveyed researchers have published any conference paper, as indicated in Figure 19 about 68% respondents said that they have contributed research papers in academic conferences, while 32% respondents have not published yet any conference paper. In the follow up question respondents, who answered yes to previous question, informed that each one on average published 3.62 papers. About 26% respondents each one published 2 conference papers, 18% respondents published 1 conference paper, and 10% respondents published 3 conference papers. Maximum number achieved is 20 papers by a single respondent. There are also four single contributors respectively for 14, 12, 10 and 7 conference papers. Next question dealt with whether any of their conference papers is freely available

online. In response to this question, about 22% respondents said that some of their papers are freely available online, while 64% respondents said no. About 14% respondents are clueless about free availability of their conference papers online. Free online availability of research papers can increase chance of transforming them open access research literature through self-archiving. In many open access institutional repositories in India, published conference papers have been considered as major asset out of total available open access resources therein.

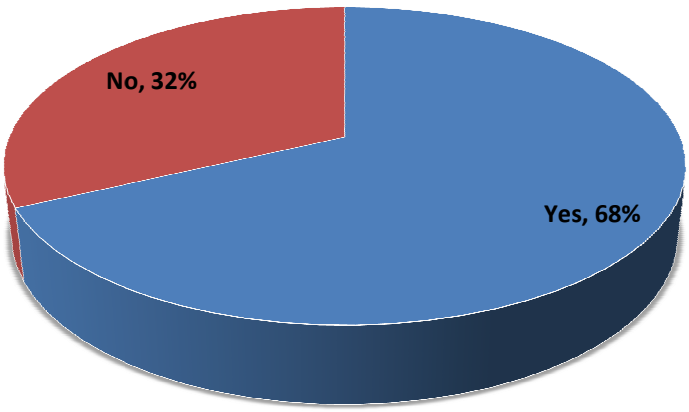
Open access institutional repositories or disciplinary repositories have been empowering researchers with simplified self-archiving, a process that increases global visibility of research literature contributed by individual researchers.

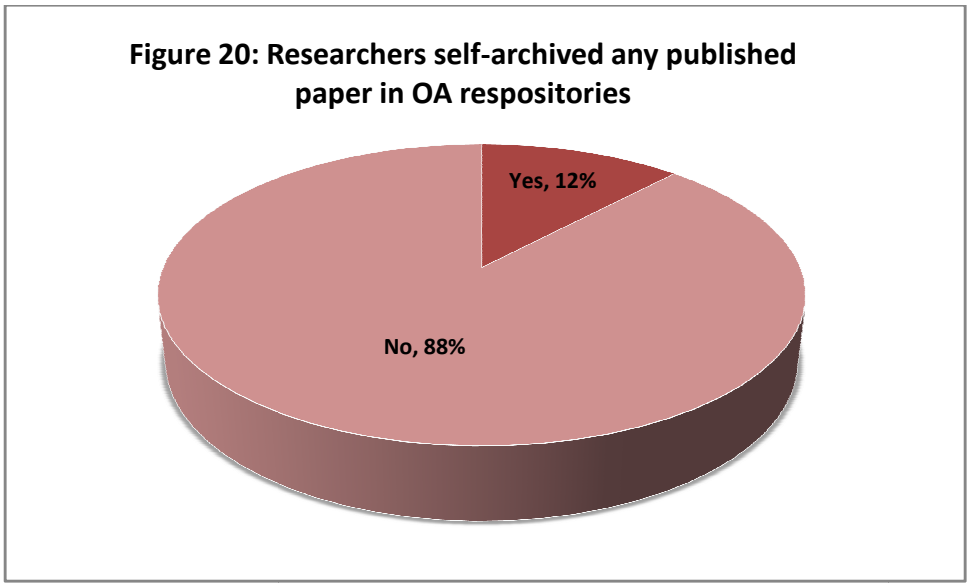
In response to a question, relating to whether surveyed researchers have ever self-archived their research papers in open access repositories, as indicated in Figure 20 about 88% respondents said that they have not self-archived yet research papers in any open access repository, while 12% respondents have prior experience of self-archiving of published research literature. Here it can be mentioned that JNU does not have any such open access repository that could accept self-archived papers for global visibility.

Open licensing can better safeguard interests of researchers who publish through open access channel. Creative Commons is most popular open licensing system that deals with not only research contents, but also creative contents originated from creative industries.

In response to a question, relating to whether surveyed researchers are aware of open licensing for publishing scholarly papers in open access mode, only about 28% respondents said that they are aware of Creative Commons open licensing system, while 72% respondents don't have any idea about the same. In its follow-up questions, they were asked about number of papers they published have Creative Commons license. All respondents indicated that they have no publication with Creative Commons license.

Figure 19: Researchers written any conference paper





Researchers' Participation in Authors' Workshops and Open Access Training Sessions

In the first part of this paper, it was mentioned that JNU regularly organizes authors' workshops for guiding researchers in getting published in peer-reviewed journals of reputed international publishers. In response to a question, relating to whether surveyed researchers have participated in any "Authors' Workshop – Guide to Getting Published", about 50% respondents said that they have participated in at least one such workshop at JNU or elsewhere, while remaining 50% respondents have not participated yet in any such training session. Figure 21 shows respondents' participation in any Authors' Workshop. In its follow up question, only 4% respondents informed that from Authors' Workshop they could learn how to get published in open access journals or open access mode in subscription-based journals. Remaining 96% respondents did not get informed about getting published in open access journals or publishing open access papers.

In the first part of this paper, it was also mentioned that JNU and many other academic institutions in India regularly organize training sessions related to open access to knowledge and information. These training sessions usually cover topics such as how to use open data portals, how to access ETD repositories, how to access many types of open access resources, how to get published in open access journals, how to self-archive research papers in institutional repositories, and understanding Creative Commons licenses. In response to a question, relating to whether surveyed researchers have participated in any training session on open access to knowledge, only 12% respondents said that they have participated in at least one such training session at JNU or elsewhere, while remaining 88% respondents have not participated yet in any such training session.

Sharing and Communicating Published Research through Online Platforms

JNU's researchers, like many other academic researchers in India, don't get desired online space in the university's website for maintaining their online research profiles. Usually an online research profile contains a list of publications, presentations and project works of an individual researcher, information about his/her awards and achievements, summary of research interests and present research works. This online profile also directs a visitor to full-text contents of published research works or sample writings. Online research profile helps in getting discovered by prospective institutions for future research career. Researchers across the world usually maintain research profiles in many online platforms. Most popular online platforms, preferred by Indian researchers are namely, Academia.edu, ResearchGate, Google Scholar Citations, getCITED.org, ResearcherID, and ORCID.org. ResearcherID and ORCID.org help in creating unique identity code for identifying same person contributing to different journals. These two sites also generate a list of publications from information available in linked databases. Some researchers although prefer personal blog or a creative website for maintaining their research profile.

In response to a question, relating to whether surveyed researchers maintain any research profile in online platforms, about 56% respondents said that they have been maintaining such online profile, while remaining 44% respondents have not created yet in any such profile in online platform. In its follow up question, majority of respondents (44%) informed that they maintain profile in Academia.edu website, while second most preferred online platform is ResearchGate with 16% share and third most preferred is Google Scholar Citations with 8% share. Many of JNU researchers have uploaded their full-text papers in their online profile for making them accessible to global research communities, particularly their followers. Their keenness in sharing full-text contents through online platforms indicates that, if properly motivated, they would become the great supporters of open access to knowledge and contributing members in self-archiving OA repositories.

In the questionnaire we had kept an open ended question to know about researchers view, engagement and contribution in open access content creation or development of open access resources. In response to this question we received textual inputs from 70% respondents, while 30% respondents did not provide any input. On analyzing comments given by the respondents, we found that most comments belong to 4 major categories, namely (a) Interested in training,

knowing more and future contributions, (b) General statements on open access benefits, (c) JNU's open access policies, and (d) Doubts about trust & quality of open access resources. Figure 22 captures a diversity of researchers' views and interests in open access publishing. Majority of respondents, about 24%, are interested in participating in future training sessions, knowing more about open access publishing and future contribution. About 6% respondents have doubts on trust and quality of open access materials. About 16% respondents commented on JNU's open access policies and 16% respondents commented on benefits of open access. Table 2 provides a comprehensive list of comments recorded in the online survey. These collated comments also indicate a diversity of thinking of researchers about open access resources and open access practices.

At the beginning of the survey many respondents were not fully aware of open access publishing, but while answering different questions in the questionnaire, they got to know different types of open access channels. At the end of this questionnaire, they responded positively and wanted to know more about open access publishing.

Figure 22: Researchers' perception and understanding of OA publishing

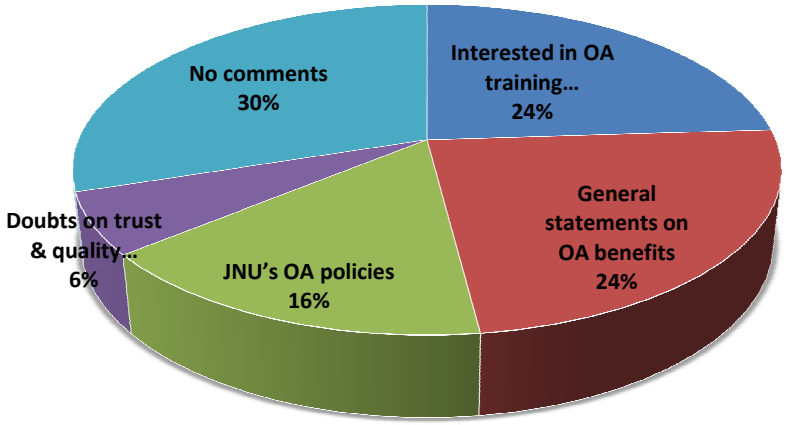


Table 2: Views and Interests of Researchers in Open Access Resources

Views and Interests	Received Comments
Interested in training, knowing more and future contributions	• Wish to learn more about open access. • Wish to know about open access movement. • Which are open access resources? • Want to learn open access publishing. • Online training can be provided in open access. • Open access orientation is required to us. • Not much aware about open access. • Needs more awareness...Training...Skill Building... • Need to know open access publishing. • Learning open access publishing. • I would like to contribute to open access in future. • I want to know more about open access!!
General statements on open access benefits	• Our faculty members sometimes publish in open access journals. • Open access mode brings worldwide visibility. • Open access is required for widening access to research. • Open access is important for researchers. • Open access resources are very helpful • Open access is great for developing world. • Open access is beneficial for university students. • I really don't have much clue. But open access seems to be good. It should be promoted. • I have not much idea about open access resources, but it seems very useful and beneficial for any researchers. • I am not engaged in open access content creation or development but such an activity will lead to more sharing of knowledge and should be encouraged among research scholars. • Can't be brief. It is very subjective with lots of dimensions. • At least online version of research articles should be made open access in all the journals so that researchers can be benefited and overall science is benefited.
JNU's open access policies	• Want to know more about open access in JNU. • OA repository in JNU would be a good option for us for self-archiving. • JNU has been developing a documentary repository for scholars. It will be of great help. • JNU does not have open access policy. • It should be mandatory for all the research/training institutes to include the orientation toward open access resources in their training curriculum. Thanks. • Interested in self-archiving, if JNU maintains open access repository. • Interested in self-archiving of my research papers in JNU's open access repository. • Great idea to have open access theses and dissertations in JNU.
Doubts about trust & quality of open access resources	• Some people don't trust, how do you change this perception? • The quality of research publication has been deteriorated as only those who have surplus funding for their projects can only publish in open access journal. • I am skeptical about open access resources.

4.0 Conclusion

JNU's researchers are privileged to have better research infrastructure, than the researchers of most other conventional universities in the country. It can be assumed that JNU's researchers are much more exposed to scholarly literature due to greater availability of all major subscription-based databases and journal gateways. Through this study we wanted to know relationship between availability of research literature and publishing open access papers by the researchers of JNU. Respondents of this study have shown their limited consumption of open access literature due to lack of awareness and lack of right tools for accessing scattered open access resources. They also so far have made very limited contribution in open access content creation. In 2012, JNU Central Library announced establishment of open access institutional repository with self-archiving provision. Till date, the open access repository has not seen light of the day. When established, JNU researchers will get a right medium to self archive a majority of their research papers, both published and unpublished.

This study examined the level of awareness of researchers in different areas of open access development, such as, consumption of open access resources, publishing in open access journals, awareness about open access initiatives at the institutional and national level, awareness about open access mandates of their fellowship grants agencies and so on. This study also tried to identify scholarly communication practices of the researchers, their publishing history in conventional publishing channels as well as in open access channels, such as in peer-reviewed journals, peer-reviewed conference papers and self-archiving of papers in institutional repositories. In majority of questions, respondents have shown their ignorance or non-participation in either in open access content consumption or content creation. Beyond open access publishing, majority of researchers also have beginner-level understanding in getting published in scholarly world. This is probably due to fact that, except PhD, other research degrees do not require to show any published work to the university authority or fellowship grant agencies. Publishing mandate for the researcher is missing at JNU, along with Indian university system. Incentivizing publishing habits of researchers would probably increase qualitative and quantitative outcomes of research degrees.

Survey findings of this study indicate that while the majority of JNU's researchers having limited participation in open access mode of communications either as users or as contributors, their participation can be increased through providing them right kind of tools for accessing open access resources and right kinds of training for open access contribution. Training modules should be made available to them at 24x7 timeframe, so that they can achieve optimal level of understanding through self-paced online self-learning modules. Additionally, as hypothesized, expecting academic researchers in contributing to open access literature will be achievable when their understanding to open access publishing is arrived at a consensus level. Perceived benefits of open access resources would then outweigh their doubts and mistrust associated with open access publishing as a choice of publishing for qualitative research literature.

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