

## Web 2.0 Applications in Open Access Institutional Repositories of Asia

Aasif Mohammad Khan, Fayaz Ahmad Loan\* and Syed Aasif Ahmad Andrabi

*Centre of Central Asian Studies, University of Kashmir, Jammu and Kashmir - 190 006, India*

*\*E-mail: fayazlib@yahoo.co.in*

### ABSTRACT

The primary purpose of the present study is to find out the adoption of Web 2.0 tools in social science repositories of Asian countries. Open access repositories were selected from OpenDOAR in the year 2021. Later, websites of all repositories were manually checked to identify the existence of Web 2.0 tools. The results revealed that Japan has established the maximum number of open access digital repositories in Asia, followed by Indonesia, Turkey, India, and China. The study shows that out of the total 101 social science institutional repositories found in these top five Asian countries, only 92 repositories were operational, and the rest weren't accessible. From the operational repositories, 31.60 per cent (30) were Web 2.0 enabled, and 69.40 per cent (62) hadn't incorporated Web 2.0 in their repositories. The highest number of Web 2.0 enabled repositories was found in Turkey, followed by Indonesia and China. Japan has the highest number of OA repositories but lags behind Turkey, Indonesia, and China in Web 2.0 enabled repositories. The least number of Web 2.0 enabled repositories were found in India among these countries. RSS feeds and Atom were the most used Web 2.0 tools in these institutional repositories.

**Keywords:** Open access; Digital repositories; Institutional repositories; Social science repositories; Web 2.0 tools

### 1. INTRODUCTION

The term 'Web 2.0' was coined in 2004 by Dale Dougherty and familiarised by Tim O'Reilly (O'Reilly, 2005)<sup>1</sup>. Web 2.0 empowers users to participate and interact with the online community using various web 2.0 tools like blogs, wikis, RSS feeds, social networking sites, tagging and social bookmarking, etc. "These tools permit users to produce and publish a plethora of digital content instead of acting as consumers of information" (Stephens, 2008; Walia & Gupta, 2012)<sup>2-3</sup>. The Web 2.0 tools play a vital role in heightening the interactivity, functionality, and accessibility when embedded in any online information retrieval system, including digital repositories. Jenkins (2009)<sup>4</sup> defines Web 2.0 as "an online participatory culture", and Murugesan (2007)<sup>5</sup> label it as "wisdom web". Beer (2009)<sup>6</sup> thinks that "Web 2.0 increases user involvement". A digital repository is an online space where digital contents and assets are stored, organised, searched, and retrieved for preservation and use. Pinfield et al. (2014)<sup>7</sup> define a digital repository as, "a set of systems and services that stores ingest, storage, management, retrieval, display, and reuse of digital objects". The Budapest Open Access Initiative (2002) described Open Access "as literature, freely available on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself" (Suber, 2006)<sup>8</sup>. Open access digital

repository (OADR) represents an online archive of digital information, making its contents freely and immediately available to information seekers without any restrictions. Some of these repositories use various Web 2.0 tools that increase interactivity and functionality. Bradely (2007)<sup>9</sup> finds, "Web 2.0 tools can encourage an interactive environment and push the information to the users". "Given the importance of Web 2.0 tools, institutional repositories should adopt the Web 2.0 tools as the need and importance of these tools are constantly increasing" (Powell, 2008)<sup>10</sup>. "The Directory of Open Access Repositories (OpenDOAR) is an initiative launched by the University of Nottingham and Lund University in 2005 to keep track and lists open access repositories of the world"<sup>11</sup>. In August 2021, OpenDOAR had 5720 subject-specific and multidisciplinary repositories. These repositories use Web 2.0 tools to connect and interact with users. The present study will try to find the answer to the question, "Do repositories in social sciences adopt Web 2.0 tools to connect users and information".

### 2. LITERATURE REVIEW

A large corpus of literature is available on open access, including repositories. However, some scholars have researched the application of Web 2.0 in open access journals, repositories, websites, and libraries. Littlejohn and Pegler (2007)<sup>12</sup> studied Instant messaging, and RSS alerts whereas Murugesan (2007)<sup>13</sup> studied the use of social applications like Flickr, MySpace, and YouTube in repositories. Usage of RSS and blog to push the content to users has been investigated by Primary Research Group (2007)<sup>14</sup>. Cocciolo (2010)<sup>15</sup> suggested that institutional repositories may garner greater community participation

by adopting Web 2.0 tools in repositories. Mahmood and Richardson (2011)<sup>16</sup> found that the leading Web 2.0 applications constitute: “blogs, syndication tools like RSS & Atom, wikis, instant messaging, social networking sites, social tagging, and many more. These Web 2.0 tools allow users to learn, listen, watch, download, transfer, search, purchase, contribute, distribute, upload, label, suggest, subscribe, comment, post, and chat online (Allen, 2013)<sup>17</sup>. Cocciolo (2010)<sup>18</sup> thinks that Web 2.0 tools in Institutional Repositories increases community engagement and makes them more user-centred. Chua and Goh (2010)<sup>19</sup> argued that Web 2.0 tools hold enormous potential in enhancing communication, allowing collaboration and promoting innovations. Shafi, Gul, Shah (2013)<sup>20</sup> suggested that repositories should incorporate effective Web 2.0 technologies to look more interactive and user-centric. Gul, Bashir and Ganaie (2019)<sup>21</sup> found that a good number of South-Asian institutional repositories had incorporated Web 2.0 tools. The application of Web 2.0 tools in digital repositories have been a hot topic of research among information scientists. In most of the studies, it has been observed that digital repositories from European countries and science & technology disciplines make more use of Web 2.0 tools. Therefore, the present study attempts to find the application of Web 2.0 tools in social sciences repositories of Asian countries.

### 3. RESEARCH DESIGN

#### 3.1 Objectives of Study

The present study aims to study the social science institutional repositories of Asian countries with special emphasis on countries contribution, operational status and application of Web 2.0 tools.

#### 3.2 Methodology

Open access repositories were selected from Open DOAR in 2021. The top 5 countries were selected from Asia, based on the highest number of repositories; further, the search was refined using advanced search options based on repository type (Institutional), content (articles) and subject (Social Sciences). The websites of all repositories were manually checked to analyse the application of Web 2.0 tools.

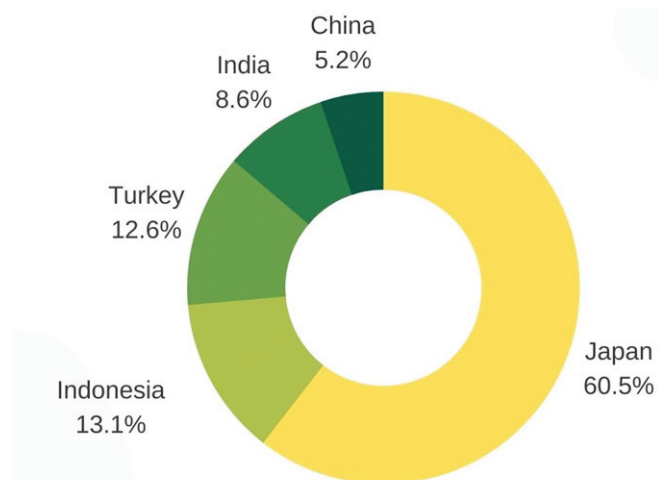


Figure 1. Top 5 countries in Asia having the maximum OARs.

### 4. DATA ANALYSIS AND INTERPRETATION

#### 4.1. Digital Repositories in Asia

There are a total of 1405 OA repositories in Asia, out of which 1129 (80.3 %) belong to only 05 countries, among these Japan with (683, 60.5 %) repositories is the leading contributor, followed by Indonesia (148, 13.1 %), Turkey (142, 12.6 %), India (97, 8.6 %) and China (59, 5.2 %) respectively (Fig. 1). The findings are in tune with the study conducted by Singh (2016)<sup>22</sup>. Besides, Loan and Sheikh (2016)<sup>23</sup> found that Japan is the biggest contributor of open access health and medicine repositories in Asia. Bashir, Mir, and Sofi (2019)<sup>24</sup> found that Asia holds 701 repositories, with Japan leading other Asian nations. Loan and Mushtaq (2018)<sup>25</sup> revealed that India has more open access repositories than China; however, repositories from China are content-rich (in terms of collection). India needs to archive more content to bridge the gap.

#### 4.2 Institutional Repositories in Social Sciences

The top 5 countries of Asia holding institutional repositories in the field of social sciences are Japan (61, 60.4 %) followed by China (17, 16.8 %), Turkey (10, 9.9 %), Indonesia (09, 8.91 %), and India (04, 4 %) respectively (Fig. 2). Japan is having a good number of social science repositories followed by

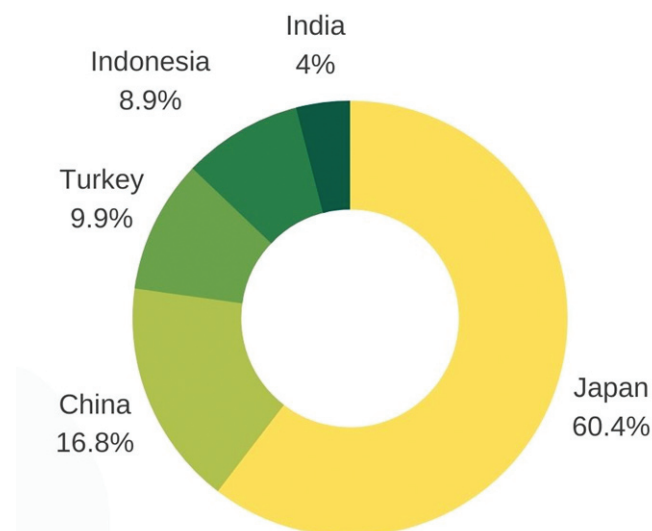


Figure 2. Top 5 Asian countries with institutional repositories in social sciences.

Table 1. Operational and Web 2.0 enabled repositories

Countries	Total repositories	Operational repositories	Web 2.0 enabled repositories
Japan	61	59	4
China	17	12	7
Turkey	10	10	9
Indonesia	9	8	8
India	4	3	2
Total	101	92	30 (31.60)

China. Out of a total of 39 repositories, 17 repositories archive articles in social science repositories in China. India has more repositories but very less repositories archive articles in social science institutional repositories.

### 4.3 Operational and Web 2.0 enabled Institutional Repositories

The study finds that out of 101 repositories from the top 5 countries of Asia in the field of social sciences, only 92 were operational, and 09 repositories could not be accessed. Out of 92 accessible repositories, 30 (31.60 %) repositories were Web 2.0 enabled, and the remaining 62 (69.40 %) have not incorporated Web 2.0 tools. The highest number of Web 2.0 enabled repositories was found in Turkey, followed by Indonesia and China. Japan has the highest number of OA repositories but lags behind Turkey, Indonesia, and China in Web 2.0 enabled repositories. The lowest number of Web 2.0 enabled repositories was found in India among the top five countries; however, the overall percentage was better in India than in Japan (Table 1). The institutions, especially universities, should keep an eye on changing technologies and implement Web 2.0 such as RSS feeds and tagging in institutional repositories.

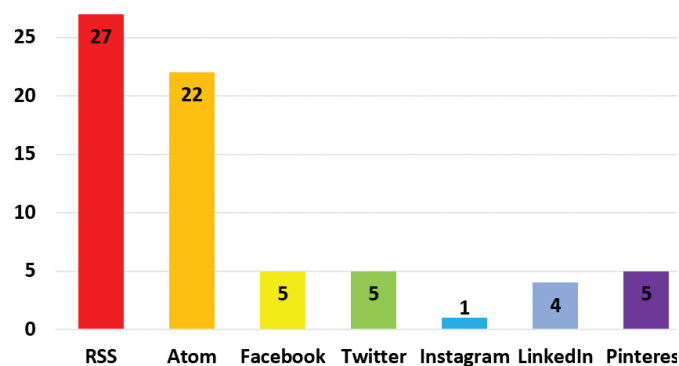


Figure 3. Web 2.0 tools incorporated by repositories.

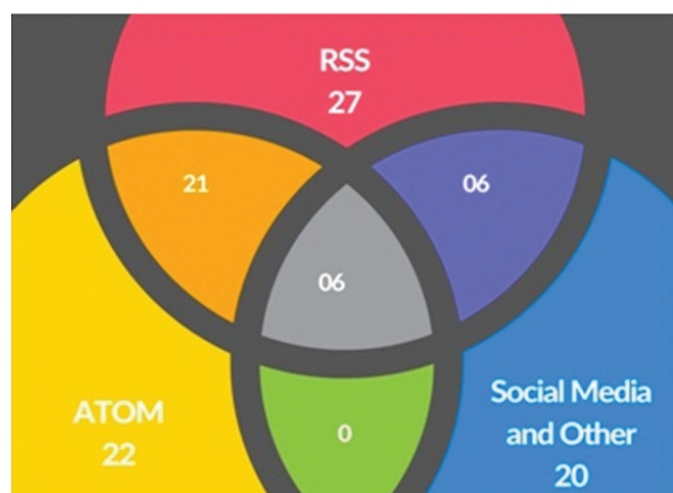


Figure 4. Web 2.0 tools used by institutional repositories.

### 4.4 Web 2.0 Tools used by Institutional Repositories

The study reveals various Web 2.0 tools that were adopted by operational repositories. RSS was present in most

repositories (27, 29.34 %), followed by Atom (22, 23.91 %). Further, social networking sites like Twitter were present in (05, 5.43 %) repositories, followed by Facebook (05, 5.43 %), Pinterest (05, 5.43 %), LinkedIn (04, 4.34 %) and Instagram (01, 1.08 %) respectively (Fig. 3). The findings are in tune with Shafi, Gul, and Shah (2013)<sup>26</sup>.

### 4.5 Web 2.0 Tools used by Institutional Repositories

Figure 4 shows the result that 21 repositories used RSS and Atom; RSS and social networking sites were present in 06 repositories, and no repository has used Atom and social networking sites together, while 06 repositories incorporated all the three tools.

## 5. DISCUSSION

The success of repositories depends on the number of Web 2.0 tools embedded in repositories, as these tools advance social activity, increase interactivity, social tagging, commenting, etc. Web 2.0 plays an active role by providing the fruitful features of commenting, giving opinions, sharing information that enhances participation and visibility. It can accelerate the altmetrics and citation scores and greatly influence the impact factor and h-index of publications and authors. It is essential to incorporate various Web 2.0 tools, including social media in institutional repositories, to share content across regions, countries, disciplines, and institutions for optimum utilisation of information.

Asian countries have adopted the culture of open access repositories as the number of repositories is gaining momentum every year. Japan has established the maximum number of open access digital repositories in Asia, followed by Indonesia, Turkey, India, and China. Singh (2016)<sup>27</sup> conducted a study on open access repositories and found that the Asian continent ranks at third position with maximum contribution from Japan followed by India, Turkey, China, and Indonesia. The top five countries have been the same since 2016; however, Japan and Turkey have retained their first and third positions, respectively. Indonesia has gained 03 spots to become 2nd, India lost 02 spots to become 4th, and China lost one spot to become fifth. In January 2009, Indonesia started its journey by establishing 38 open access repositories in a year and now has the 2<sup>nd</sup> highest number of repositories in Asia. The progress of open access digital repositories in India is slow as compared to Indonesia. India needs to gear up in the open access movement to become one of the world's leading countries. There is a small number of institutional repositories in social sciences in Asia. The findings are in tune with Loan (2014)<sup>28</sup> who identified only 3 per cent of social sciences repositories in Asia. Japan has the maximum number of institutional repositories that archive articles in social sciences, followed by China. India has more repositories but significantly fewer archive articles in social science. Creaser *et al.*, (2010)<sup>29</sup> and Gunasekera (2017)<sup>30</sup> argued that social science scholars in India are not much familiar with open access publishing and digital repositories than other academic scholars. National institutions like ICSSR, ICHR, ICPR and higher educational institutions must establish subject-specific repositories for the

social science field as well. Besides, the academic community in social sciences may be informed of the benefits of archiving their resources in institutional repositories so that they will archive their publications in these repositories.

The results revealed that out of 101, only 92 institutional repositories were operational, and 09 repositories were not accessible. It is essential to keep the repositories intact so that contents deposited in these repositories can be used to advance knowledge. Out of 92 accessible repositories, almost one-third of repositories used Web 2.0 tools to connect users and contents, whereas two-thirds of repositories do not incorporate any Web 2.0 tools. Japan has the highest number of OA repositories but lags in terms of Web 2.0 enabled repositories. The highest number of Web 2.0 enabled repositories was found in Turkey, and Indonesia, followed by China, India and only a few repositories were Web 2.0 enabled in Japan. RSS was used by the majority of repositories, followed by Atom. Linh, (2008)<sup>31</sup> argued that the reason behind RSS incorporation in repositories is that it is pretty easier to implement RSS in repositories, and it alerts users promptly when new content is added. Further, social networking sites like Twitter, Facebook, Pinterest, LinkedIn, and Instagram were also used in institutional repositories. The possible reasons can be lack of skills among information repositories managers in creating Web 2.0 enabled websites. The LIS schools should adopt 'web design' as one of the subjects in graduate level so that LIS professional can learn these skills and will not be dependent on IT professionals. Besides, library associations like Indian Library Association (ILA) and library networks like Developing Area Network (DELNET) must conduct workshop on web design to train the working professionals. Further, LIS professional can join forums and groups providing filtered information on web designing to update their skills. The problem of non-functional repositories will also be resolved by keeping the websites of institutional repositories active.

## 6. CONCLUSION

We are living in the age of technology and the era of Web 5.0. Technology is changing fast. When the new technology emerges, the old becomes obsolete. The contemporary Web 5.0 era is led by intelligent personal agents assisting in the decision-making process, but unfortunately, the application part of the technology lacks behind. The score of Web 2.0 enabled institutional repositories in social sciences in Asian giants is not promising, and the occurrence of Web 2.0 tools in those repositories is not satisfying at all. Web designers and information scientists must adopt Web 2.0 tools in institutional repositories. The repository administrators must use at least Web 2.0 tools such as RSS feeds and tagging in institutional repositories to keep them up-to-date. Social scientists should be encouraged to archive their contents in institutional repositories. Awareness programs, seminars, and workshops should be conducted to foster open access movement and increase the culture of self-archiving in the social science field. LIS schools, associations, networks, libraries and professionals can play a leading role in this direction.

## REFERENCES

1. O'Reilly T. What is Web 2.0: Design patterns and business models for the next generation of software, 2005. <http://oreilly.com/weeb2/archive/what-is-web-20.html> (Accessed on 22 June 2021).
2. Stephens, M. Exploring Web 2.0 and libraries. *Libr. Technol. Reports*, 2008 **42**(4), 8-14. <https://journals.ala.org/index.php/ltr/article/view/4662/5525> (Accessed on 25 June 2021).
3. Walia, P.K. & Gupta, M. Application of Web 2.0 tools by national libraries. *Webology*. 2012, **9**(2), 21-30. <http://www.webology.org/2012/v9n2/a99.html> (Accessed on 25 June 2021).
4. Jenkins, H. Confronting the challenges of participatory culture: Media education for the 21<sup>st</sup> century. The MIT Press, 2009. <https://library.oapen.org/handle/20.500.12657/26083> (Accessed on 23 June 2021).
5. Murugesan, S. Understanding Web 2.0. *IT professional*, 2007, **9**(4):34-41. doi: 10.1109/MITP.2007.78
6. Beer, D. Power through the algorithm? Participatory web cultures and the technological unconscious. *New Media Soc.* 2009, **11**(6), 985-1002.
7. Pinfield, S.; Salter, J.; Bath, P.A.; Hubbard, B.; Millington, P.; Anders, J.H. & Hussain, A. Open-access repositories worldwide, 2005–2012: Past growth, current characteristics, and future possibilities. *J. Assoc. Inf. Sci. Technol.*, 2014, **65**(12), 2404-2421.
8. Suber, P. Open access overview. Open Access: Unrestricted Access to Published Research. 2006, 7-12.
9. Bradley, P. How to use Web 2.0 in your library. Facet, London, 2007.
10. Powell, A. Web 2.0 and repositories. Have we got our repository architecture right? 2008. <https://www.slideshare.net/eduservfoundation/repositories-and-web-20-have-we-got-our-repository-architecture-right> (Accessed on 23 June 2021).
11. OpenDOAR (2021). OpenDOAR statistics: An overview of the data held in OpenDOAR, (2021). [https://v2.sherpa.ac.uk/view/repository\\_visualisations/1.html](https://v2.sherpa.ac.uk/view/repository_visualisations/1.html) (Accessed on 21 January 2021).
12. Littlejohn, A. & Pegler, C. Preparing for blended e-learning. London: Routledge, 2007.
13. Murugesan S. Understanding Web 2.0. *IT professional*, 2007, **9**(4):34-41. doi:10.1109/MITP.2007.78
14. Primary research group. The international survey of institutional digital repositories. Primary Research Group Inc; 2007.
15. Cociolo, A. Can Web 2.0 enhance community participation in an institutional repository? The case of PocketKnowledge at Teachers College, Columbia University. *J. Acad. Libr.*, 2010, **36**(4), 304-12. doi: 10.1016/j.acalib.2010.05.004
16. Mahmood, K. & Richardson, J.V. Adoption of Web 2.0 in US academic libraries: A survey of ARL library websites. *Program.*, 2011, **45**(4), 365-375.

- doi:10.12691/iscf-2-2-2
17. Allen, M. What was Web 2.0? Versions as the dominant mode of internet history. *New Media & Soc.*, 2013, **15**(2), 260-75.
  18. Cocciolo, A. Can Web 2.0 enhance community participation in an institutional repository? The case of PocketKnowledge at Teachers College, Columbia University. *J. Acad. Libr.*, 2010, **36**(4), 304-12.  
doi: 10.1016/j.acalib.2010.05.004
  19. Chua, A.Y. & Goh, D.H. A study of Web 2.0 applications in library websites. *Libr. Inform. Sci. Res.*, 2010, **32**(3), 203-11.
  20. Shafi, S.M.; Gul, S. & Shah, T.A. Web 2.0 interactivity in open access repositories. *Electron. Libr.*, 2013, **31**(6), 703-712.  
doi: 10.1108/EL-08-2011-0121
  21. Gul, S.; Bashir, S.; Ganaie, S.A. Evaluation of institutional repositories of South Asia. *Online Inform. Rev.*, 2019, **44**(1), 192-212.  
doi: 10.1108/OIR-03-2019-0087
  22. Singh, P. Open access repositories in India: Characteristics and future potential. *IFLA Journal*, 2016, **42**(1), 16-24.
  23. Loan, F.A. & Sheikh, S. Analytical study of open access health and medical repositories. *Electron. Libr.*, 2016, **34**(3), 419-434.  
doi: 10.1108/EL-01-2015-0012
  24. Bashir, A.; Mir, A.A. & Sofi, Z.A. Global landscape of open access repositories. *Libr. Phil. Pract. (e-journal)*, 2019, 1-21. <https://digitalcommons.unl.edu/libphilprac/2445> (Accessed 21 June 2021)
  25. Loan, F.A. & Mushtaq, R. Open Access digital repositories in India and China-A comparative study. *J. Ind. Libr. Assoc.*, 2018, **54**(4), 205-10.
  26. Shafi, S.M.; Gul, S. & Shah, T.A. Web 2.0 interactivity in open access repositories. *Electron. Libr.*, 2013, **31**(6), 703-712.  
doi: 10.1108/EL-08-2011-0121
  27. Singh, P. Open access repositories in India: Characteristics and future potential. *IFLA Journal*, 2016, **42**(1), 16-24.
  28. Loan, F.A. Open access digital repositories in Asia: Current status and future prospects. *Int. J. Inform. Sci. Manage.*, 2014, **12**(2), 35-45.
  29. Creaser, C.; Fry, J.; Greenwood, H.; Oppenheim, C.; Proberts, S.; Spezi V. & White, S. Authors' awareness and attitudes toward open access repositories. *New Rev. Acad. Libr.*, 2010, **16**(1), 145-161.  
doi: 10.1080/13614533.2010.518851
  30. Gunasekera, C. Social science scholars perception towards open access and institutional repositories. *People: Int. J. Soc. Sci.*, 2017, **3**(2), 2244-2259.
  31. Linh, N.C. A survey of the application of Web 2.0 in Australasian university libraries. *Libr. Hi Tech.*, 2008, **26**(4), 630-653.  
doi: 10.1108/07378830810920950

## CONTRIBUTORS

**Mr Aasif Mohammad Khan** is a Ph.D. Scholar at the Centre of Central Asian Studies, University of Kashmir, Srinagar, Jammu & Kashmir, India. He obtained his Master's degrees in Library and Information Science (LIS) from the University of Kashmir and qualified the Junior Research Fellowship (JRF) and National Eligibility Test. He has collected and analysed the data for the present study.

**Dr Fayaz Ahmad Loan** is Sr. Documentation Officer at the Centre of Central Asian Studies, University of Kashmir, Jammu & Kashmir (India). He obtained his Doctor's degrees in Library and Information Science (LIS) from the University of Kashmir. His current research interests include Open access, Bibliometrics, and Scientometrics. In the current study he has written introduction, discussion, conclusion, and the final and revised drafts of the paper.

**Mr Syed Aasif Ahmad Andrabi** is a Ph.D. Scholar at the Centre of Central Asian Studies, University of Kashmir, Srinagar, Jammu & Kashmir, (India). He obtained his Master's degree in Library and Information Science (LIS) from the University of Kashmir. In the current study he has collected literature, prepared a literature review and compiled references for the current study.