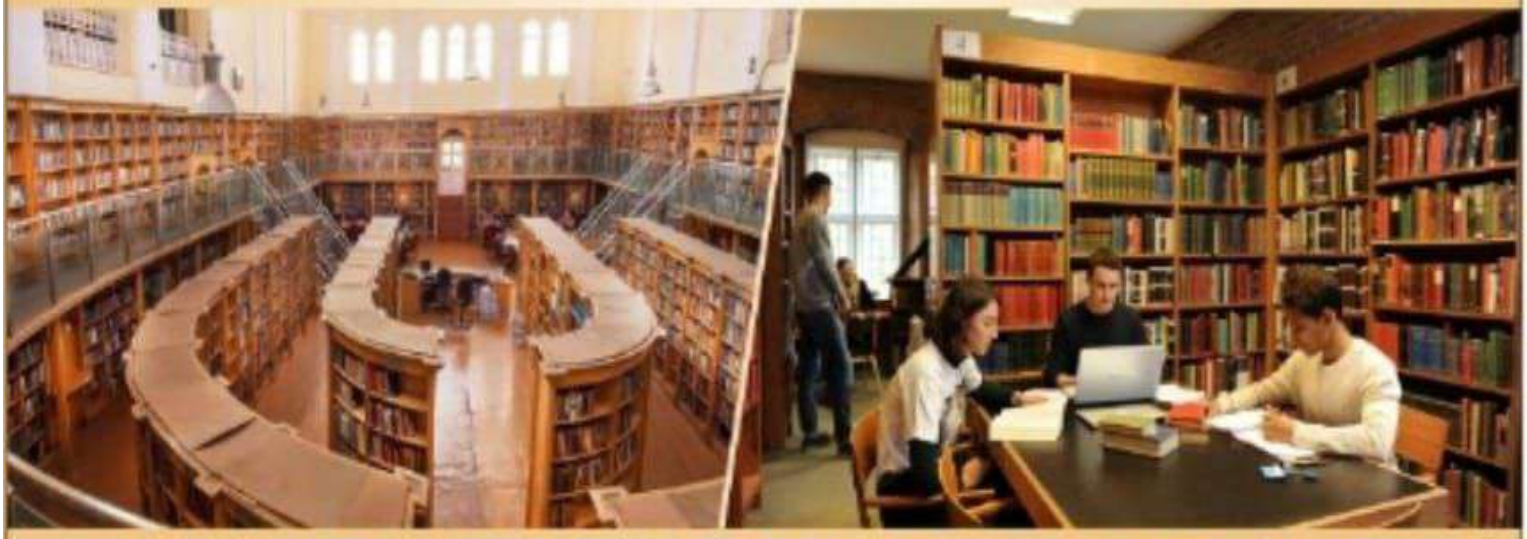
ISSN 2349-9621

LIS TODAY

Vol.9, No.2 December, 2023

A Peer-reviewed (Refereed)
Bi-annual Journal of Library & Information Science



ISSN: 2349-9621

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MAPPING OF COLLABORATIONS AND PUBLICATIONS PATTERN OF SOCIOLOGY RESEARCH IN INDIA BETWEEN 1991 AND 2020: A SCIENTOMETRIC STUDY

Lambodara Parabhoi
Research Scholar, Department of Library & Information Science
Mizoram University, Aizawl-796004
suresh19871987@gmaill.com
&
Prof. Manoj Kumar Verma
Professor, Dept. of Library and Information Science
Mizoram University (a Central University),
Aizawawl-796004, Mizoram
Email: manojdli@mzu.edu.in

Abstract

Recent past year, there has been renewed interest in research evaluations and it play vital role for building reputations of country, organization, institutes and also individual researcher. Several studies have documented on research evaluation using bibliometric cc indicator. In this paper, applied bibliometrics indicator for evaluate the research preference of Sociology research published in India between 1991 and 2020. We accessed Scopus database and retrieved 2410 publications. The growth of both citations and publications was not stable overtime period fluctuated. Result showed that, Indian Sociologist scholarly communion communicated in various format and preferable source of journal was "Economic and Political Weekly". More than half of the publications communicated individually rather than collaboratively. Jawaharlal Nehru University and University of Delhi standout in top leading organization in terms of contributions. Top most frequently keyword was "India". Indian sociologist prefers to collaborate with developing countries such as USA and UK.

Keywords: Sociology Research, Research Evaluation, Collaborations and Publications Pattern, Sicentometrics, Bibliometrics, Indian Sociology

1. Introductions

Research evaluations play a key role for the development of country, organization, institutes and also individual researcher. In order to know, the strength and weakness of the given area, we often do research evaluation using various parameter and we found that, bibliometric tool has been frequently applied to evaluate the research. In recent past year, several studies have been conducted using bibliometric indicators and periodically evaluate the research performances in science and technology, arts and humanities and social sciences (Abramo et al., 2015; Brink et al., 2006; Ebadi & Schiffauerova, 2015; Kousha & Thelwall, 2017). We may also see that, bibliometric indicator has been applied for ranking of nation, institutes and universities (i.e. QS Ranking, THE Ranking and NIRF Ranking etc.) even if for individual researcher. India is the fifth leading contributor in research in the world (Kanaujia et al., 2022; Kocyigit & Akyol, 2021; Thelwall, 2017). Every year, a large amount of research has been conducted and communicated using

various scholarly platform. These scholarly communications are to be evaluated periodically. (B. M. Gupta et al., 2013) reported that India ranked as 12th position and contributed 1.18 % world share between 2001and 2010. In this paper, we conducted an sicentometrics study on Sociology research publishing Indian researcher using Scientometric indicators.

2. Research questions

- RQ: What is the growth of Sociology research in India?
- RQ: What are the publications type in Sociology research in India?
- RQ2: What are the top collaborator in Sociology research in India between 1991 and 2020?
- RQ: Who is top leading contributor in individual organizations in India and abroad?
- RQ: How national and international collaboration happen in Sociology research?
- RQ: What are the key areas of research in Sociology in India?
- RQ: What are the publications and collaborations pattern in Sociology in India?

3. Previous research

In the research past year, several bibliometrics and sicentometrics study has been conducted on humanities and social science in India and abroad (Barrot, 2023; Dhawan et al., 2015; Garfield, 1984; Goel & Garg, 1994; Gülgöz et al., 2002; Missen et al., 2020; Norris & Oppenheim, 2007; Sangam, 2001; Seaman & Kaczor, 2017). For instance, (Barrot, 2023) evaluated the research performance of education research contributed by South-East Asian countries. The finding of study showed that 13,527 publications published in 709 different sources indexed in Scopus database. Leading countries from the study region were published to preferred published in top ranked journal. However, developing countries were preferred to published in low ranking journal indexed at Scopus.

(Missen et al., 2020) reviewed the scholarly research output published by 50 social scientists from Pakistan .The study reported a total 2000 document published social scientist during 2009–2018.Gender disparity in research were found and male dominance in social science research however the gender disparity low in social science research in Pakistan. Due to collaboration in research citation growth were found. Science research were found dominance in the study as compare to social science research.

(B. M. Gupta et al., 2009) made a comparative study of research performance of social science research of Brazil, China and India using bibliometric indicator. Study reported that India ranked as 13 position in Social Science research and USA was the top leading contributor in social science research. China was leading contributor of number (29282) of research publications among Brazil (6472) and India (13596) while Brazil was received high average rate of citation ((1.66) as compare to India (0.82) and China (0.52) between 1996 and 2007.

(R. Gupta et al., 2014) reported that University of Delhi (654) and Jawaharlal Nehru University, New Delhi (510) was the top leading institute and contributor in the field of social science during 2008-2012 . It was also reported that top 25 academic institutions in India that specialize in the fields of economics, econometrics, and finance have made a significant contribution to research in these domains, represent 19.87% of the total research output. Similarly, 15.6 % of contributions received from top 25 leading institution in psychology in India.

(Neelamma & Nyamagoudar, 2017) reviewed of political science research output using bibliometric indications. The sample of the data was. The study revealing a steady growth, moderate collaboration, and the dominance of single-author papers in the

South Asian Journal of Socio-Political Studies, with Tamil Nadu emerging as a leading contributor. Out of the total 533 publications, In the year 2009 highest number (63) of articles found, which accounts for approximately 11.63% of the total publications.

(Kaur & Nagaich, 2019) analysed 9525 articles authored by Indian scholars in Social Sciences and Humanities (SSH) from 2005 to 2014, finding a preference for publication in Indian journals and a positive correlation between collaboration and research impact in SSH. the majority of the research conducted resulted in articles being published and almost half of the publications were authored by a single researcher without any collaboration.

(Tripathi et al., 2018) evaluated the Indian social contribution during 2005–2014. Authors reported that 9525 publications contributed Indian social scientist and preferred to publisher their document in Indian origin journal. in the year 2011 and 2014 highest number of publications contributed social scientist. From the result it was found that high impact on collaborative research than single authorship publications.

(Bhui & Sahu, 2018) reported 623 publications published by IIT Kharagapur fulltime faculty during 2000-2016. The study further revealed that majority of publication contributed in the between 2010 and 2014, "Psychological Studies" preferred source of publications. Further reported that both single and collaborations research have been seen during the study year. IITKGP prefers communicated their scholarly output in reputed published such as Sage and Springer and Taylor & Francis etc.

(Parabhoi et al., 2022) examined the scholarly research output published selected ICSSR research institute. A total 4411 document published by Indian Social Scientist and it was preferring to communicate their research in "Economic and Political Weekly" 647. despite of high rate of individual papers, the low rate of average citation found individual authors that collaborative work. Both nation and international collaboration found during the study period.

4. Method

In order to collect, Indian sociology publications, the study used Scopus database hence, the database is comprehensive dataset for social science research and frequently used in sicentometrics research. The study used advanced search options and enter subject area"" and affiliated country limited to "India". In order to collect comprehensive literature, We used Scopus subject category and remove irrelevant documents from the result, the study used filtered options (Barrot, 2017, 2023; Khir et al., 2023; Lee, 2023).

The search key terms are as flows "SUBJAREA (soci) -sociology AND political AND science AND AFFILCOUNTRY (India) AND NOT SUBJAREA (medi OR nurs OR vete OR dent OR heal OR mult) AND NOT SUBJAREA (agri OR bioc OR immu OR neur OR phar) AND NOT SUBJAREA (ceng OR chem OR comp OR eart OR ener OR engi OR envi OR mate OR math OR phys)". The search further limited to English language limited 1991-2020. The data exported on 12 Dec, 2023 and included all type of publications (Book, Book Chapter, Conference paper, articles and reviews etc.) for analysis. A total 2410 number of documents found published between 1991 and 2020.

5. Data analysis

5.1 Growth of Publications in Sociology in India

Table 1 shows an overview of scholarly outcome of sociology research in Indian published between 1991 to 2020. The data shows a significant increase in the number of publications over a period of 30 years. In the year 1991 starting with a mere 3 publications and the number steadily growth, it

was impressive increase up to 2410 publications by 2020. Simultaneously, the number of citations substantial rise from 11 in 1991 to an aggregate of 26673 by 2020, with notable spikes in certain years, most notably in the year 2015. Over a period of time both citations and number of publications fluctuated. It was noted that very few publications and citations found in the year 1994, where the number of publications is low (1) document and received 0 citation. Notable growth observed in both publications and citations in the years 2008, 2009, 2010, 2011 and 2012.

Year	Citation	No of Documents
1991	11	3
1992	208	10
1993	105	7
1994	0	1
1995	114	7
1996	43	5
1997	196	7
1998	419	15
1999	178	7
2000	205	9
2001	831	22
2002	602	17
2003	204	18
2004	680	19
2005	240	14
2006	511	21
2007	633	28
2008	1279	48
2009	1553	80
2010	1210	61
2011	1421	74
2012	1787	133
2013	1901	150
2014	1512	126
2015	2820	156
2016	1790	222
2017	1960	264
2018	1571	273
2019	1209	303
2020	1480	310
Grand Total	26673	2410

Table.1 Growth of Publications

5.2 Distribution of Publications by Type of Documents

As shown in table.2 offers a comprehensive overview of the distribution of research documents by types. From the result,

it observed that articles emerge as the dominant (58.92%) of the total publications types and it received (67.47 %) citations. Books, though fewer in number, exhibit significant influence and contributing (13.07 %) of papers and (14.58 %) of citations. Book chapters, representing (18.09%) of publications and (8.78%) of citations. Reviews, with (7.68%) of publications which contribute substantially to both the number of citations (7.94%). While conference papers, editorials, letters, and notes make up smaller proportions.

Doc Type	No Papers	% of Paper	No of Citations	% of Citation
Article	1420	58.92	17995	67.47
Book	315	13.07	3888	14.58
Book chapter	436	18.09	2341	8.78
Conference paper	13	0.54	139	0.52
Editorial	25	1.04	109	0.41
Letter	1	0.04	0	0
Note	15	0.62	82	0.31
Review	185	7.68	2119	7.94
Grand Total	2410	100	26673	100

Table.2 Distribution of Publications by Type of Documents

5.3 Preferable Source in Sociology Research in India

The below table illustrates top sources of publications in the field of sociology research in India published between 1991 and 2020. The below data comprehensive compare and highlights the diversity in contributions, ranging from general socio-economic and political analyses to specialized areas and it is showcasing the multifaceted nature of sociological research publications in India. The journal "Economic and Political Weekly" emerges as the foremost contributor, contributed 223 papers and received 1983 citations, underscoring its pivotal role in disseminating sociological research. "Contributions to Indian Sociology" reflecting its significant influence and ranked as second position with 57 papers and 675 citations. Sociological Bulletin and Indian Journal of Social Work follow, contributing 42 papers with 87 citations and 38 papers with 36 citations, respectively. Notably, the Indian Journal of Gender Studies stands out in fifth place, contributing 35 papers and accumulating 258 citations. The journal "Social Science and Medicine" with a lower paper count 19 but a remarkably high citation counts 867.

Rank	Source of Publications	No of Paper	No of Citation
1	Economic and Political Weekly	223	1983
2	Contributions to Indian Sociology	57	675
3	Sociological Bulletin	42	87
4	Indian Journal of Social Work	38	36

5	Indian Journal of Gender Studies	35	258
6	International Journal of Sociology and Social Policy	23	178
7	Man in India	20	11
8	Social Science and Medicine	19	867
9	History and Sociology of South Asia	18	18
10	South Asia Research	17	230

Table.3 Preferable Source of Journals in Sociology

5.4 Most Frequently Used Keywords

The results obtained from keywords analysis are shown in table.4. The most frequently used key term was "India," and it appeared 273 times which is suggesting a strong emphasis on research contextualized within the country. "Gender" holds the second position and indicates a significant focus on gender-related sociological inquiries, with 63 occurrences. The term "caste" ranked as third positions with 40 occurrences. "Identity" and "culture" take the fourth and fifth positions, respectively, highlighting the attention given to understanding individual and collective identities, as well as cultural influences in Indian sociology. Remarkably, "women" ranked as sixth position with most frequently occurring keyword, emphasizing the specific focus on gender issues. Some frequently used keyword were "Democracy", "education", "Religion" and "development these keywords ranked in the top 10 frequently used keywords.

	Top Keywords	
Rank	**Words**	**Occurrences**
1	India	273
2	Gender	63
3	Caste	40
4	Identity	37
5	Culture	27
6	Women	24
7	Democracy	23
8	Education	23
9	Religion	22
10	Development	21

Table.4 Most frequently Used Keywords

5.5 Top 20 Leading Contributor by Organization in Sociology Research in India

The provided below data outlines the top 20 leading contributor by organization in Indian sociology research and data was ranked by highest the number of documents. It was observed that Jawaharlal Nehru University (JNU) secures the top position with 228 documents, showcasing its central role in shaping sociological discourse in India. Followed by University of Delhi and Tata Institute of Social Sciences claim the second and third positions with 178 and 172 publications, respectively. It was also observed that both technology and management

institutes are ranked in top leading institutes such as the Indian Institutes of Technology (IIT Delhi, IIT Bombay, IIT Kharagpur, and IIT Kanpur) and management schools like the Indian Institute of Management Ahmedabad. Further, some institutes like International Institute for Population Sciences, National Institute of Advanced Studies, and Centre for the Study of Developing Societies underscores the interdisciplinary nature of Indian sociology research. The rankings highlight the collaborative efforts of diverse institutions in advancing sociological knowledge, with JNU and University of Delhi emerging as key leaders in the field.

Document by Affiliations		
Rank	**Affiliations**	**No of Doc**
1	Jawaharlal Nehru University	228
2	University of Delhi	178
3	Tata Institute of Social Sciences	172
4	University of Hyderabad	72
5	Indian Institute of Technology Delhi	48
6	Delhi School of Economics	42
7	O.P. Jindal Global University	41
8	International Institute for Population Sciences	39
9	Indian Institute of Technology Bombay	36
10	Panjab University	35
11	Jamia Millia Islamia	32
12	Indian Institute of Management Ahmedabad	32
13	National Institute of Advanced Studies, Bangalore	29
14	Indian Institute of Management Calcutta	29
15	Azim Premji University	29
16	Indian Institute of Technology Kharagpur	27
17	Indian Institute of Technology Kanpur	26
18	Centre for the Study of Developing Societies India	26
19	Institute of Economic Growth India	23
20	South Asian University	23

Table.6 Top leading Contributor by Organization in Sociology

5.6 International collaboration in Sociology research in India

Table 7 display the top collaborating countries contributing to Indian sociology research, by the highest number of documents produced in collaboration. The United States leads and ranked as first position with 185 collaborative documents, which clearly shows the extensive international collaboration involving of American researchers in the Indian sociological landscape. UK follows closely with 121 documents, reflecting a robust partnership in sociological research between Indian and British institutions. It was also observed from the below table that, India socialist made diverse and global network of research collaboration involving in these countries, Australia, Netherlands, and Germany, with 52, 47, and 42 collaborative documents, respectively. Canada, France, South Africa, China, and Brazil also emerge as prominent collaborators, showcasing the widespread international engagement in Indian sociology research.

Top Collaborator		
Rank	**COUNTRY/TERRITORY**	**No of Doc**
1	United States	185
2	United Kingdom(UK)	121
3	Australia	52
4	Netherlands	47
5	Germany	42
6	Canada	40
7	France	34
8	South Africa	29
9	China	27
10	Brazil	23
11	Japan	23
12	Norway	22
13	Sweden	19
14	Switzerland	19
15	South Korea	17

Table.7 Top 15 Collaborator by Country

5.7 Authorship Pattern:

From the below, it was noted that Indian sociology publications have a diverse range of authorship patterns, with a majority of single-author publications, it was followed by two-author and three-author collaborations. Closer inspection of the table 8 shows that significant proportion of publications, accounting for (57.88%) are attributed to single authors Indian sociology research, which indicates significant prevalence of independent scholarly contributions. Interestingly, Two-author publications constitute (17.01%) of the total followed by Three-author papers contribute to (7.3%), suggesting a moderate presence of collaborative efforts involving three authors. Four-author papers follow, comprising 3.82% of the total, while publications with more than four authors contribute (13.98%), ranked at third highest number of publications.

Authorship Pattern	**No of Paper**	**% of Paper**
Single authors	1395	57.88
Two author	410	17.01
Three Authors	176	7.3
Four Authors	92	3.82
More than four	337	13.98

Table.8 Authorship pattern in Sociology research India between 1991-2020

5.8 Conclusion and discussion:

The current research carried out on research outcome on "Sociology" published in India between 1991 and 2020 using Scopus database. From the result, it was revealed that majority of the scholarly communication type was research article 58.92% followed by book chapter and books. Which indicates, that Indian Sociologist prefer to communicate in journals and research articles. It was also observe from the result, Sociologist prefer communicated their scholarly output in "Economic and Political Weekly". More than half of the publications communicated individually rather than collaboratively. Jawaharlal Nehru University and University of

Delhi standout in top leading organization in terms of contributions. These results suggest that, they are showcasing its central role in shaping sociological discourse in India. The most frequently used term, "India," appears 273 times, suggesting a strong emphasis on research contextualized within the country. "Gender" holds the second position, indicating a significant focus on gender-related sociological inquiries, with 63 occurrences. The United States leads the list with 185 collaborative documents, underscoring the extensive international collaboration involving American researchers in the Indian sociological landscape. The United Kingdom follows closely with 121 documents, in summary, these results reflecting a robust partnership in sociological research between Indian and British institutions. This collaborative landscape emphasizes the global nature of sociological inquiries in India, benefitting from a rich exchange of ideas and perspectives among scholars from various nations.

References:

Abramo, G., Cicero, T., & D'Angelo, C. A. (2015). Should the research performance of scientists be distinguished by gender? *Journal of Informetrics*, *9*(1), 25–38. https://doi.org/https://doi.org/10.1016/j.joi.2014.11.002

Barrot, J. S. (2017). Research impact and productivity of Southeast Asian countries in language and linguistics. *Scientometrics*, *110*(1), 1–15. https://doi.org/10.1007/s11192-016-2163-3

Barrot, J. S. (2023). Research on education in Southeast Asia (1996–2019): a bibliometric review. *Educational Review*, *75*(2), 348–368. https://doi.org/10.1080/00131911.2021.1907313

Bhui, T., & Sahu, N. B. (2018). Publications by faculty members of humanities and social science departments of IIT Kharagpur: A bibliometric study. *DESIDOC Journal of Library and Information Technology*, *38*(6), 403–409. https://doi.org/10.14429/djlit.38.6.13569

Brink, M. Van Den, Brouns, M., & Waslander, S. (2006). Does excellence have a gender ? A national research study on recruitment and selection procedures for professorial appointments in The Netherlands. *Employee Relations*, *28*(6), 523–539. https://doi.org/10.1108/01425450610704470

Dhawan, S. M., Gupta, B. M., & Gupta, R. (2015). Social science research landscape in South Asia: A comparative assessment of research output published during 1996-2013. *Library Philosophy and Practice*, *2015*(1).

Ebadi, A., & Schiffauerova, A. (2015). *Bibliometric Analysis of the Impact of Funding on Scientific Development of Researchers*. *9*(5), 1435–1445.

Garfield, E. (1984). Anthropology Journals : What They Cite and What Cites Them. *Current Anthropology*, *25*(4), 514–528.

Goel, K., & Garg, K. C. (1994). Social science research in India: A bibliometric study. *Collection Management*, *17*(4), 95–104. https://doi.org/10.1300/J105v17n04_07

Gülgöz, S., Yedekçioglu, Ö. A., & Yurtsever, E. (2002). Turkey's output in social science publications: 1970-1999. *Scientometrics*, *55*(1), 103–121. https://doi.org/10.1023/A:1016055121274

Gupta, B. M., Dhawan, S. M., & Singh, U. (2009). Social Science Research in India, China and Brazil—A Comparative Study. *DESIDOC Journal of Library & Information Technology*, *29*(2), 15–23. https://doi.org/10.14429/djlit.29.237

Gupta, B. M., Kumbar, B. D., & Gupta, R. (2013). Social science research in India: A Scientometric analysis of publications (2001-10). *DESIDOC Journal of Library and Information Technology*, *33*(6), 442–450. https://doi.org/10.14429/djlit.33.5475

Gupta, R., Kumbar, B. D., & Tiwari, R. (2014). Ranking of Indian universities in social sciences using bibliometric indicators during 2008-12. *DESIDOC Journal of Library and Information Technology*, *34*(3). https://doi.org/10.14429/djlit.34.7340

Kanaujia, A., Singh, P., Nandy, A., & Singh, V. K. (2022). Research contribution of major centrally funded institution systems of India. *Current Science*, *123*(9), 1082–1088. https://doi.org/10.18520/cs/v123/i9/1082-1088

Kaur, B., & Nagaich, S. (2019). Analysis of Social Science Research in India: A Mapping Report. *SSRN Electronic Journal*, *October*. https://doi.org/10.2139/ssrn.3397916

Khir, M., Abdullah, J., Sharunizam, S., Noor, S., & Sahid, Z. (2023). ASEAN Library and Information Science (LIS) research (2018 – 2022): a bibliometric analysis with strategies for enhanced global impact. In *Scientometrics*. Springer International Publishing. https://doi.org/10.1007/s11192-023-04878-0

Kocyigit, B. F., & Akyol, A. (2021). Bibliometric and Altmetric Analyses of Publication Activity in the Field of Behcet's Disease in 2010–2019. *Journal of Korean Medical Science*, *36*(32), 01–10. https://doi.org/10.3346/jkms.2021.36.e207

Kousha, K., & Thelwall, M. (2017). Are wikipedia citations important evidence of the impact of scholarly articles and books? *Journal of the Association for Information Science and Technology*, *68*(3), 762–779. https://doi.org/10.1002/asi.23694

Lee, D. (2023). Bibliometric analysis of Asian 'language and linguistics' research: A case of 13 countries. *Humanities and Social Sciences Communications*, *10*(1), 1–23. https://doi.org/10.1057/s41599-023-01840-6

Missen, M. M. S., Qureshi, S., Salamat, N., Akhtar, N., Asmat, H., Coustaty, M., & Prasath, V. B. S. (2020). Scientometric analysis of social science and science disciplines in a developing nation: a case study of Pakistan in the last decade. *Scientometrics*, *123*(1), 113–142. https://doi.org/10.1007/s11192-020-03379-8

Neelamma, G., & Nyamagoudar, M. R. (2017). Research Trends in Political Science Literature : A Study of Scientometric Analysis. *Research Journal of Library and Information Science*, *1*(1), 7–14.

Norris, M., & Oppenheim, C. (2007). Comparing alternatives to the Web of Science for coverage of the social sciences' literature. *Journal of Informetrics*, *1*(2), 161–169. https://doi.org/10.1016/j.joi.2006.12.001

Parabhoi, L., Verma, M. K., & Sinha, M. K. (2022). Evaluation of publications and collaboration pattern of indian social sciences research with special reference to icssr research institutes. In 2514-9342 (Ed.), *20th MANLIBNET Convention & International Conference on Libraries of the Future: Emerging Trends* (pp. 573–584). https://doi.org/9789392711060

Sangam, S. L. (2001). Collaborative Research in Psychology in India: A Scientometric Study. *Proceedings of the Second Berlin Workshop on Scientometrics and Informetrics*, 177–183. http://search.ebscohost.com/login.aspx?direct=true&db=lxh&AN=93727935&site=ehost-live&scope=site

Seaman, P., & Kaczor, S. A. (2017). 21st Century Anthropology Scholarship: A Citation Analysis. *Behavioral and Social Sciences Librarian*, *36*(3), 122–135. https://doi.org/10.1080/01639269.2017.1771036

Thelwall, M. (2017). *Web indicators for research evaluation: A practical guide*. Morgan & Claypool.

Tripathi, M., Kumar, S., & Babbar, P. (2018). Bibliometrics of social science and humanities research in India. *Current Science*, *114*(11), 2240–2247. https://doi.org/10.18520/cs/v114/i11/2240-2247

SCIENTOMETRIC SKETCH AND ACADEMIC VISIBILITY OF NOBEL LAUREATE SVANTE PÄÄBO

Tathagata Dhar
Librarian,
Naba Barrackpur Prafulla Chandra Mahavidyalaya, Kolkata
Email: tdtathagata@gmail.com

Abstract

The swedish scientist Svante Pääbo received his noble prize in Physiology or Medicine in the year 2022, due to his work for the modern human evolution and the neandertal genome. The study attempted to ascertain and assess the academic visibility of nobel laureate Prof. Svante Pääbo from 1974 to 2023. The data was retrieved from the Google Scholar database. The study makes use of a number of scientometric parameters to identify Prof. Svante Pääbo's most prolific sources, most referenced works, authorship patterns, and top publications. Afterwards, the gathered data was processed and examined using a variety of programmes, including Microsoft Excel, VosViewer, and Publish or Perish. The study found that during 1974-2023, Prof Pääbo had the most citations (12304) in the year of 2015. He contributed the most publications (49) in Nature. The research shows that he collaborated closely with Krause J, Green Re, Kelso J, Prufer, K . His article named "A global reference for human genetic variation" received the most citations. The collaboration rate was 0. 86. It was also observed that the most number of publications belongs to the group of seven authorship (26. 48%).

Keywords: Scientometric, academic visibility, citation metrics

1. Introduction

Svante Pääbo, a Swedish geneticist born in 1955 at Stockholm. He was the first to decode the Neanderthal DNA and identify the hominid Denisova. He received the Nobel Prize in Physiology or Medicine in 2022 for his revolutionary work on hominin DNA and human evolution. Pääbo pursed his phd from Uppsala university and postdoc from University of Zürich and University of California. His most significant discoveries occurred after he used DNA extraction and sequencing to investigate the connection between modern and ancient people. He used mitochondrial DNA (mtDNA) to sequence a piece of the Neanderthal genome, indicating that humans and Neanderthals are separate species that swerved by one another 500,000 years ago. Pääbo went on to sequence the full Neanderthal genome, finding up to 4% overlap with the genomes of persons of European and Asian descent. Additionally, Pääbo analysed the mitochondrial DNA from a 40,000-year-old finger bone found in the Denisova Cave in Russia, proving the existence of the Denisovans, a previously unidentified hominid species that coexisted with humans and Neanderthals. All three species interbred, and as a result, up to 6% of the DNA of contemporary Southeast Asian and Melanesian peoples can be attributed to the Denisovans. (The Nobel prize in physiology or medicine 2022). In today's digital and social media age, online visibility is crucial. By Using academic websites like LinkedIn, ResearchGate, Academia. edu and Google Scholar, it is possible to establish connections with audiences far outside of the traditional academic borders. An essential step on the road to academic visibility is collaboration.

They offer a diverse approach and additional knowledge.

Notable collaborators can also help us become more visible in our respective field (Mauvais-Jarvis, 2016). A quick and easy tool to conduct a thorough search for academic literature is Google Scholar. We can Search across a variety of subjects and sources from a single platform, including academic publishers, professional associations, online repositories, institutions, and other websites. This includes articles, theses, books and abstracts. Google Scholar assists us in locating pertinent research throughout the intellectual community (About google scholar).

2. Objectives

- To figure out the top metrics for publications according to GS rank
- To find out the total number of publications with citations
- To recognise the authorship patterns
- To know the author collaboration networks
- To identify the most widely cited sources
- To point out the most often used keywords by prof Pääbo

3. Research Problem

No study was found to showcase the academic visibility of nobel laureate Prof. Svante Pääbo.

4. Review of related literature

(Sinha, 2017) has examined the Amartya Sen's scientometric profile. According to the study, he published 43 books between 1960 to 2015,. The most notable contributor of Dr. Sen was Jean Dreze. The study also revealed that he is well known for his work on social issues, politics, government, and financial economics in addition to his contributions to the field of education.

(Bhattacharyya & Bhattacharyya Sahu, 2020) describes the informetric potrait of Elinor Ostrom, who became the first female laureate to win the Nobel Prize in Economics, The study identified that she wrote 197 publications between 1965 to 2018. The study is based on scopus data. Her work, which appeared in 116 journals was on the management of natural resources. Her bibliometric study sheds light on both the significance of her significant work and its potential future significance.

(Bhui & Bhattacharyya Sahu, 2017) studied the scientometric portrait of S. R. Ranganathan. The study is based on the publications as well as his citations as shown in the Google Scholar database. The study found that during 1952-2014 he received 3017 citations.

(Akakandclwa, 2008) attempts to study a biographical picture of professor Seter Siziya, who made a significant impact in the field of medicine. During 1988 to 2008, professor Seter Siziya contributed 152 papers. According to the study, Siziya has worked with 241 researchers from different institutions. A. S. Muula, E. Rudatsikira, T. Marufu, and M. Tshimanga were the top collaborators.

(Aichouchi & Gorry, 2018) describes the Hagenmüller's work. The study reveal that he published 796 papers and has more than 16,000 citations. The authors used different scientometric parameters to examined the impact of his work, collaborations and his main research topics.

(Bansal, 2018) has studied the publication output of Nobel Prize winner Arieh Warshel, who received his nobel prize in chemistry in the year 2013. Throughout 1968 to 2016, he contributed 393 publications, including 25 book chapters.

His writings are evaluated based on the year, authoring trends, and communication styls.

For the purposes of this research, the data has been retrieved from the Warshel Centre for Multiscale Simulations website.

5. Methodology

The publication data of professor Svante Pääbo have been collected from google scholar database using Publish or Perish software, which is a software program that retrieves and assesses academic citations. For further research, the papers were downloaded in a number of file formats. It was subsequently processed and analyzed using programmes like VosViewer to further analyze and visualize the downloaded data.

Professor Svante Pääbo has written 555 papers and received 125729 citations from 1974-2023. The h-index and g-index of his google scholar profile are 168 and 354 respectively.

Papers	Citations	Years	Cites_Year	Cites_Paper	Cites_Author	Papers_Author	Authors_Paper	h_index	g_index
555	125729	49	2565. 9	226. 54	38624. 03	175. 37	4. 97	168	354

6. Data Analysis

6.1 Most prolific sources

Sources	Count
Nature	49
Proceedings of the National Academy of Sciences	41
Science	27
Molecular biology and evolution	14
Genetics	9
PLoS biology	9
Nature genetics	8
Cell	7
Nucleic acids research	7
PloS one	7
The American Journal of Human Genetics	7
Genome research	6
American Journal of Human Genetics	5
Journal of Molecular Evolution	5
Science	5
Trends in Genetics	5
Current biology	4
Genome biology	4
Molecular Biology and Evolution	4
Molecular Ecology	4

Table 1- Most prolific sources

Table 1 shows the most prolific sources preferred by Svante Pääbo. We can discover from the table that Svante Pääbo published 49 publications in Nature, which is one of the leading multidisciplinary science journal. He contributed 41 publications in Proceedings of the National Academy of Sciences followed by 27 publications in Science. He also contributed 14 publications in Molecular biology and evolution.

6.2 Top publication metrics based on GS algorithm

Cites	Year	GSRank	ECC	CitesPerYear	CitesPerAuthor	AuthorCount	Age
12304	2015	1	12304	1538	12304	1	8
6042	1989	2	6042	177. 71	863	7	34
4408	2010	3	4408	339. 08	630	7	13
2450	2007	4	2450	153. 13	350	7	16
2200	2002	5	2200	104. 76	314	7	21
2195	2005	6	2195	121. 94	2195	1	18
2103	2014	7	2103	233. 67	300	7	9
2065	2010	8	2065	158. 85	258	8	13
2006	1997	9	2006	77. 15	334	6	26
1950	2012	10	1950	177. 27	279	7	11
1946	2000	11	1946	84. 61	487	4	23
1550	2004	12	1550	81. 58	221	7	19
1378	1989	13	1378	40. 53	1378	1	34
1361	2014	14	1361	151. 22	194	7	9
1236	2013	15	1236	123. 6	177	7	10
1218	2001	16	1218	55. 36	244	5	22
1186	2016	17	1186	169. 43	148	8	7
1167	2011	18	1167	97. 25	167	7	12
1112	2011	19	1112	92. 67	139	8	12
1093	2002	20	1093	52. 05	156	7	21

Table 2 Top publication metrics based on GS algorithm

Table 2 illustrates the top publications of Svante Pääbo based on Google Scholar. From this table we can observe that, 12304 citations received in the year of 2015 which acquired first GS rank (1538 cites per year), which had one authorships followed by 2nd, 3rd and 4th GS rank received in the year 1989,2010 and 2007 where he received 6042 citations (177. 71 cites per year), 4408 citations (339. 08 cites per year) and 2450 citations (153. 13 cites per year) respectively.

6.3 Most cited articles

Cites	Title	Source	ECC	Citesperyear
12304	A global reference for human genetic variation	Nature	12304	12304
6042	Dynamics of mitochondrial DNA evolution in animals: amplification and sequencing with conserved primers.	Proceedings of the National Academy of Sciences	6042	863
4408	A draft sequence of the Neandertal genome	Science	4408	630
2450	Distribution, silencing potential and evolutionary impact of promoter DNA methylation in the human genome	Nature genetics	2450	350
2200	Molecular evolution of FOXP2, a gene involved in speech and language	Nature	2200	314

2195	Initial sequence of the chimpanzee genome and comparison with the human genome	Nature	2195	2195
2103	The complete genome sequence of a Neanderthal from the Altai Mountains	Nature	2103	300
2065	Genetic history of an archaic hominin group from Denisova Cave in Siberia	Nature	2065	258
2006	Neandertal DNA sequences and the origin of modern humans	Cell	2006	334
1950	A high-coverage genome sequence from an archaic Denisovan individual	Science	1950	279
1946	Mitochondrial genome variation and the origin of modern humans	Nature	1946	487
1550	Genetic analyses from ancient DNA	Annu. Rev. Genet.	1550	221
1378	Ancient DNA: extraction, characterization, molecular cloning, and enzymatic amplification.	Proceedings of the National Academy of Sciences	1378	1378
1361	Ancient human genomes suggest three ancestral populations for present-day Europeans	Nature	1361	194
1236	Complete mitochondrial genome sequence of a Middle Pleistocene cave bear reconstructed from ultrashort DNA fragments	Proceedings of the National Academy of Sciences	1236	177
1218	Ancient DNA	Nature Reviews Genetics	1218	244
1186	The Simons genome diversity project: 300 genomes from 142 diverse populations	Nature	1186	148
1167	The evolution of gene expression levels in mammalian organs	Nature	1167	167
1112	Deep proteome and transcriptome mapping of a human cancer cell line	Molecular systems biology	1112	139
1093	Intra-and interspecific variation in primate gene expression patterns	Science	1093	156

Table 3-Most cited articles

Table 3 demonstrates the most cited articles written by the by the noble lauterate Svante Pääbo. It can be discovered from the table that "A global reference for human genetic variation" article published by Nature received both the highest number of citations (12304) and cites per author followed by "Dynamics of mitochondrial DNA evolution in animals: amplification and sequencing with conserved primers" (6042 citations) and "A draft sequence of the Neandertal genome" (4408 citations) respectively.

6.4 Total number of cited publications

Year	New	Total
1991	342	3498
1992	366	3864

1993	450	4314
1994	647	4961
1995	589	5550
1996	881	6431
1997	894	7325
1998	1004	8329
1999	1319	9648
2000	1330	10978
2001	1691	12669
2002	1745	14414
2003	2053	16467
2004	2303	18770
2005	2611	21381
2006	3297	24678
2007	3347	28025
2008	3380	31405
2009	3131	34536
2010	3701	38237
2011	4067	42304
2012	4755	47059
2013	4952	52011
2014	5850	57861
2015	5857	63718
2016	6850	70568
2017	7874	78442
2018	8276	86718
2019	9076	95794
2020	8625	104419
2021	9773	114192
2022	8914	123106
2023	2623	125729

Table 4- Total number of publications with citations

Table 4 describes the year wise citations received by the Svante Pääbo during 1991-2023. It can be find from the above table that he received total 125729 citations. Out of which in the year of 2021 he received the highest citations (9773) followed by the year of 2019 (9076) and 2022 (8914) respectively.

6.5 Authorship patterns

One authored	73	13. 15
Two authored	58	10. 45
Three authored	44	7. 92

Four authored	52	9. 36
Five authored	54	9. 72
Six authored	66	11. 89
Seven authored	147	26. 48
Eight authored	53	9. 54
Nine authored	7	1. 26
Ten authored	4	0. 72
Eleven authored	1	0. 18

Table 5- Authorship patterns

Collaboration Rate= 486/559 = 0. 86

Table 5 discuss a total of 73 (13. 15%) documents are one authored, 58 (10. 45%) documents are two authored, 44 (7. 92%) documents are three authored. Out of the remaining, she wrote 52 documents in four authorship, 54 documents in five authorship, 66 documents in six authorship, 147 documents in seven authorship and 53 (9. 54%), 7 (1. 26%), 4 (0. 72%), 1 (0. 18%) document in eight, nine, tenth and eleventh authorship respectively. The most number of publications belongs to the group of seventh authorships with 26. 48% of the total. The collaboration rate found 0. 86 which indicates that most of the work of Prof Carolyn Ruth Bertozzi was written in collaborative ways.

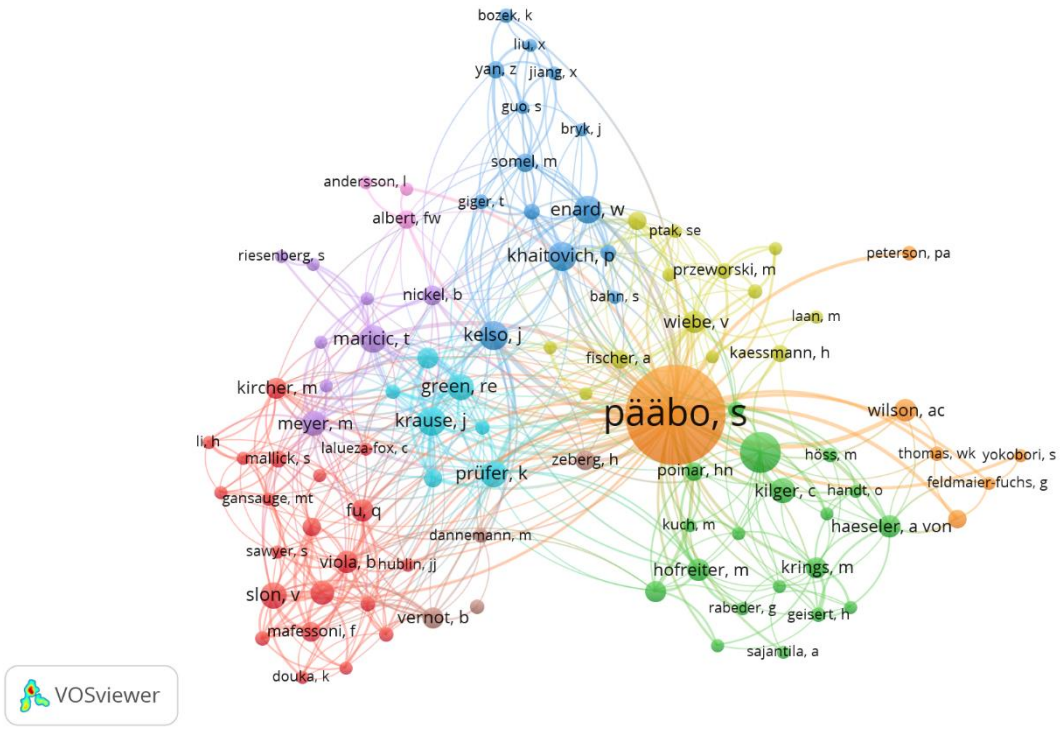

Figure 1- Author collaboration network

Figure 1 illustrates the author collaboration network generated by the VOSviewer. Out of a total of 990 authors 96 authors meet the requirement. The author of this study is assumed to have written at least 5 documents. As observed from figure 1, Prof Pääbo had very strong collaboration with Krause J, Green Re, Kelso J, Prufer, K etc.

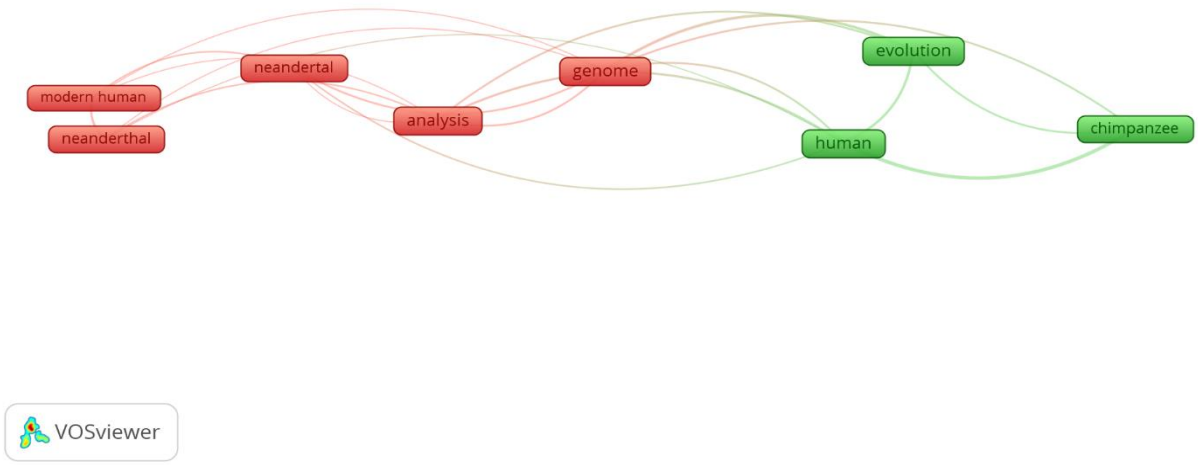

Figure 2-Visualization of Co-occurrence networks

Figure 2 shows the two clusters which are pointed out in the analysis. This analysis follows full counting method. The most occurring key terms are "analysis", “genome”, “neandertal”, “modern human” belonging to the red cluster, while other most visible terms are "chimpanzee", “evolution” and "human" from the green clusters.

7. Discussion and conclusion

We can conclude with the fact that the purpose of the study is to draw the scientometric sketch and to identify the academic visibility of scientist Svante Pääbo during 1974-2023. The study found that, in the year 2015, Prof. Pääbo had the most citations (12304), earning the top GS rank (1538 citations annually) with one authorship. The Nature article "A global reference for human genetic variation" received the most citations. According to the analysis, Prof. Pääbo had the most citations (12304) in 2015. According to the data, the group of seven authorships has the greatest number of publications (147, 26. 48%). Collaboration rate of 0. 86 suggests that Prof. Pääbo wrote collaboratively on the majority of his works. According to the study, Prof. Pääbo collaborated closely with Krause J, Green Re, Kelso J, Prufer, K, and other individuals. Professor Pääbo contributed the most publications (49) in Nature. The research also shows that "analysis," "genome," "neandertal," and "modern human" are the most often appearing key terms.

References

- Aichouchi, A., & Gorry, P. (2018). Paul Hagenmuller’s contribution to solid state chemistry: A scientometric analysis. Journal of Solid State Chemistry, 262, 156-163.
- Akakandclwa, A. (2008). A Glimpse at a Scientist: a Scientometric Portrait of Professors Seter Siziya. Zambia Library Associatioll Journal, 23(1–2), 34–46.
- Bansal, S. (2018). Scientometric Portrait of Nobel Laureate Arieh Warshel. Journal of Advancements in Library Sciences, 5(2), 63–67.

- Bhattacharyya, P. K., & Bhattacharyya Sahu, N. (2020). Informetric Portrait of Elinor Ostrom, the Nobel Laureate in the Field of Economic Sciences. Journal of Scientometric Research, 9(2), 204–213. https://doi.org/10.5530/jscires.9.2.25
- Bhui, T., & Bhattacharyya Sahu, N. (2017). Scientometric Portrait of Dr. S. R. Ranganathan: A Study. International Journal of Library Science, 15(1).
- Google. (n.d.). About google scholar. Google. https://scholar.google.co.in/intl/en/scholar/about.html
- Mauvais-Jarvis, F. (2016). Developing academic visibility in the Medical Sciences. Ochsner journal. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5024799/
- Sinha, A. K. (2017). Scientometric study of books authored by Nobel laureate Amartya Sen. Annals of Library and Information Studies,64(1), 9-15
- The nobel prize in physiology or medicine 2022. NobelPrize.org. (n.d.). https://www.nobelprize.org/prizes/medicine/2022/press-release/

INCLUSIVE LIBRARY FOR IMPAIRED STUDENTS IN VIETNAMESE UNIVERSITY

Bui Thi Hong
University of Architecture Ho Chi Minh City, Vietnam
Email: hong.buithi@uah.edu.vn
&
Tran Thi Khoi Nguyen
University of Architecture Ho Chi Minh City, Vietnam
Email: nguyen.tranthikhoi@uah.edu.vn

Abstract

As one of the first-hand empirical efforts, the paper investigates the outstanding role of the inclusive library formed in the university, examines how they work, structure, and its impacts on cultivating accessibility of students with disabilities. Particularly, the article emphasizes equality rights, policy reforms, and opportunities for approaching institutions of higher education, as well as identifies the practical situations existing. Along with that, an empirical observation was carried out with over 100 websites of libraries in Vietnamese universities including public and private institutions. The findings of the investigation show that the inclusive library contributes significantly to the overall development of people with disabilities, especially in gaining equal accessibility to benefits, rights, policies, and opportunities from society. As a consequence of the state of current existing situations, which directly intervene in the special needs of learners with impairments, the paper makes some recommendations for libraries of Vietnamese universities, such as facilities, library infrastructure, collections and services, activities, etc. Moreover, these practical solutions to practical problems aim to raise further awareness among the government, leaders of parent universities, staff, and non-disabled people with respect to the equal rights and policies of impaired students, regardless of what conditions and where they are. More importantly, they have many more equal opportunities for improving and developing comprehensively their impaired abilities and skills in certain circumstances. Theoretical and practical situations of the findings are considered below.

KEYWORDS: Inclusive library, people with disabilities, Vietnamese University, recommendations.

1. Introduction

In a modern and civilized society, especially for users with disabilities, their need for equality becomes more and more important than other ones. Having the same position as non-disabilities is the most essential thing in their life. Like other types of libraries, the inclusive library is also considered to be an essential part and an ideal place for all levels of learners, regardless of who they are, where they live, and their circumstances, they have equal opportunities to discover available values which nature brings to them. Apart from this, they are also given the same rights without suffering any discrimination (e.g., race, religion, sex, language, age, nationality, etc.), as well as accessibility to benefits from society. In addition to this, in the educational environment, the inclusive library is also considered an indispensable sector of innovating and enhancing the quality of inclusive education and training, an important part that is in charge of different roles to various forms of disabled populations. It can

be argued that it makes great contributions to the lifelong careers of learners with disabilities, a place that takes them all to an equal world that they really desire.

It can be reasoned that providing fully inclusive support and assistance to all disabilities on the one hand helps them-self develop in all aspects, and also gives them opportunities to overcome the community's prejudice, discrimination, and injustice. On the other hand, its presence contributes to reducing a part of the burden for society in both the present and future. Particularly for education institutions, determining and clearly understanding the needs of all target audiences without discrimination are significant factors to thrive and achieve much success in the long-term future, including inclusive and sustainable development in terms of education. Along with this, identifying the existing status and characteristics of people with disabilities is essential to build a solid foundation in the structural buildings and make appropriate products and services for them at the beginning of the establishment. Regarding impaired problems, Vietnamese Government Law shows six main types of disabilities including Mobility disability; Hearing and speaking disability; Visual/seeing disability; Mental disability; Intellectual disability; and other disabilities/impairments. An extra illustration of this, Law also presents the severity of disability into three levels 1. Persons with severe disabilities are those who are unable to support themselves in their daily activities; 2. Persons with moderate disability are those who can support themselves in some of their daily activities; 3. Persons with minor disabilities are those who do not fall under either type (General Statistics Offices, 2018).

On the whole, it can be seen that the inclusive library has many distinguishing factors from the other ones when examined. A typical example of this can be mentioned is the specific needs of learners based on their disabled features including the mental and physical. From an investigation into the practical conditions of disabled students, the paper conducts an exploratory literature review. Then, examine current situations (e.g., the building model including physical infrastructure and facilities, products/services) in academic libraries of domestic universities. Along with that, this practice provides recommendations for institutions of higher Vietnamese education institutions, which helps them to figure out the current problems that learners with disabilities experience. An illustration of this is accessibility to library resources, products, and services. For institutions of Vietnamese higher education, given a completed operation model in terms of all aspects, which not only contributes to comprehensive goals and sustainable development but also enhances competition among others. More importantly, disabled learners can start a new chapter of their future life by replying to available opportunities.

2. Discussion of theoretical basis

Identifying the important role and impact of the inclusive library for students with disabilities in the inclusive education environment, a theoretical basis is essential to increase a clear understanding of the background, as well as get in-depth knowledge of influential factors from previous articles. Some of the points presented are to provide a convincing explanation of all aspects related to the approach.

First of all, the main sector can be recognized that the characteristics of library target audiences are different from other libraries, namely people with disabilities. Looking at disabled features recognizes that they are various from behavioral, mental, intellectual, cognitive, and physical - in other words, they show any condition that affects a person's body movement and control, particularly, they tend to have difficulties participating in daily activities, such as walking, moving, standing, moving the parts of the body like muscles, hands, arms, etc (Kenya, n.d.). According to the World Health Organization (WHO), “Disability is an umbrella term, covering impairments, activity

limitations, and participation restrictions. An impairment is a problem in body function or structure; an activity limitation is a difficulty encountered by an individual in executing a task or action; while a participation restriction is a problem experienced by an individual in involvement in life situations". More than 1 billion people around the world have some form of disability (or 15% of the world's population (Rayini, 2017). Also, according to a statistic issued in 2016-early 2017 by the Vietnamese General Statistics Office, the total number of PWDs is 6,225,519 people nationwide, including 5,553,860 people aged 18 years and older (General Statistics Offices, 2018). Thus it can be argued that establishing or having an inclusive model in terms of architecture depends mainly on these typical features.

On top of that it can also mention the relevant policies of government and associations, such as IFLA statements, law documents, or terms issued. Furthermore, the Government's Law on Rights, Benefits, and Privileges of PWDs guides that "States should have preferential treatment policies in every field to support them to access and use information and social services. More importantly, institutions, agencies, organizations, enterprises, and individuals must comply with the provision of relevant legislation for PWDs as well as be responsible for providing orientation and counseling to help PWDs to their independent needs (Nguyen Thi Anh, 2018). It should be noted, that once they learn the characteristics and special needs of PWDs, as well as reluctantly comply with government policies, universities can provide building models and products and services to users with standards and quality. Moreover, the policies also play a primary part in the source to show awareness of government and community towards disabled people. According to the IFLA (International Federation of Library Associations and Institutions and UNESCO (the United Nations Educational, Scientific and Cultural Organization) every library must provide proper services for those who do not have easy access to them, such as the mentally and physically disabled, the ill and imprisoned (Rayini, 2017). Notably, a Joint Circular No.42/2013/TTLT-BGĐT-BLĐTBXH-BTC of the Government of Vietnam issued in 2013 by the three ministries mentioned the policies on scholarship and support for disabled people in terms of means and learning materials. Briefly, through the demonstration of the government's education policies, it can be said that passing many rules and regulations aims to ensure equality of opportunity for people who have limited accessibility to all existing areas of society.

Something else that it needs to comment on is the nature of inclusive education. Obviously, the UN Convention on the Rights of PWDs affirmed that education can entrust PWDs by increasing their awareness of their choices and reducing their dependency and vulnerability (Nguyen Thi Anh, 2018). All of this means is, that if the universities of Vietnam want to be recognized as prestigious educational institutions, or standard quality education by the global community, they must meet fully the conditions and terms that are mentioned in the law documents of associations related to the Vietnamese government, as well as the goals on the trend of sustainable development towards the future.

And so finally, as statements in theory, communities' attention to scholars who give case studies on particular subjects of learners with disabilities in the inclusive environment of higher education. This helps other researchers have much further proof of considerable knowledge to refer to their paper, and also provide useful sources of information to individuals, administrators, governments, and institutions who contribute substantially to the future of people with disabilities. In spite of the disabled groups being regarded as the labor force is not advantageous to them in terms of economic growth. An extra explanation for this, fact also demonstrates that there are many international studies

related to disabled individuals, such as "Library and Information Services to the Visually Impaired Persons (Rayini, 2017)", "The satisfaction level of Students with Disabilities with Library and Information Services (Smadi, 2022)", "Accessibility and facilities for the disabled in public and university library building in Iran (Bodaghi & Zainab, 2013)", etc. All argued that library work specialized in products and services aims to create a safe framework for personal conversations that can help to challenge prejudice, get rid of discrimination, prevent conflicts, and contribute to greater human cohesion across social, religious, and ethnic divisions. In addition to this, they have been found effective in increasing positive effective attitudes towards working in diverse groups (Sharif, et al., 2020). According to Moisey's definition of inclusive library, an inclusive library is a vital community resource, addressing the diverse information needs of all members of the community (Moisey, 2007). However, regarding comprehensive factors at the university level, there are few mentioned articles, especially, and no specific studies on that in Vietnam. The majority of the papers were undertaken in groups that showed obvious impairment such as the visually impaired in public libraries or in the center for the disabled. Thus, fully understanding and being acutely aware of defining characteristics of impaired communities contribute significantly to making reasonable investment funds in the process of future innovation to government and educational institutions.

To sum up, the model of the inclusive library plays a vital role in the lifelong learning opportunities for people with disabilities. Contrary to a variety of illustrated hypotheses and what is happening in practice, Vietnamese students with disabilities currently have practical limitations, such as a shortage of support from people, equipment, technology, and clear policies to access higher education environments in the same areas. Thus to get on the research topic, the following sections of the paper negotiate over the potentially related issues that impact on in more detail. Through analyzing the existing situations, the study makes some recommendations for the model of the inclusive library to help parent universities pay further attention to persons with disabilities, especially for facilitating their accessibility to an equally inclusive education environment regardless of no matter what their position and circumstances.

3. Objective and Methodology

The purpose of the study is to identify the useful role of the inclusive library as a basis for a clearer understanding of its importance, its impact, and its influence on people with disabilities. Then, it will describe the state of currently existing situations related to library buildings in Vietnamese universities. Examining the different related factors of both public and private education institutions to make recommendations for those, which help them make greater orientations to introduce remarkable improvements in the model of the operational mechanism. All of the above is to provide equal benefits and policies for Vietnamese students with disabilities in the present and the future.

The study is conducted by investigating the theory of previous research and using empirical observations to determine the practical impact of related factors on the learning environment of students with disabilities in higher education institutions all over the world, especially in Vietnam. The typical traits of target-impaired audiences, policies, the structure model of library buildings, products, services, and architectural infrastructure are examples. There are over 100 public and private libraries at Vietnamese universities identified through its websites and an exploratory observation within the paper.

4. The state of current situations

According to Wikipedia, "The academic library is a center or building that is attached to campuses of a higher education

institution and serves two complementary purposes: to support the curriculum and the research of the university faculty and students. Academic libraries must determine a focus for collection development since comprehensive collections are not feasible". It means that the library is located on the campus of parent universities that aim to serve the goal and mission of those. Therein, librarians do this by identifying the needs of the faculty and student body and the mission and academic programs of the college or university. To better understand the operational structure of building models existing, there are probably some significant aspects related to examining whether the capabilities of the provision are adequate for the needs of impaired students, with the general developing goal of society and education in Vietnam now, or not.

The first factor that would be examined is the capability of providing significant resources that are strongly involved in that possibility. 100 of 242 Vietnamese universities (Nguyen Minh Ngoc, 2022) cover both public and private campuses. Observation found that all things initially set into the mechanism of control and work is to only target students who are non-disabled, such as facilities, equipment, IT infrastructure (including assistive equipment and technology), physical buildings, products, services, etc. More interestingly, all libraries in the public units do not even have any special services and standard equipment for students with disabilities (SWDs), and they do not even get any help from the librarian's assistance when needed. Similarly, only very few libraries in the private universities have services delivered, but they do not provide full opportunities for use. The reason for this is to put a limit on available resources and materials when their patrons ask. Some typical sectors could be infrastructural buildings, auxiliary equipment, facilities, and physical spaces (e.g., Van Lang University, RMIT University, and Thang Long University, etc.). As a result of this, it can be reasoned that giving benefits to students with disabilities at the same level of education presents a lack of equality of opportunity at present.

The second one mentioned the existing characteristics of target audiences with disabilities who recently attended higher education institutions, especially for some typical cases identified as impaired mobility, vision, and deafness. According to a report, MOET has not collected such data from colleges and universities, however, based on the information of WHO, only 0.1% of PWDs in Vietnam obtain a Bachelor's degree and 6.5% have a Certificate of Professional Practicing (Nguyen Thuy Anh, 2018). Based on the statistics, it proved that participants in the university environment of these groups are not much. Furthermore, another exploratory discovery also found that places covered a higher percentage of disabled people than universities that are in the specialized vocational training centers or the disabled centers of the agencies of the local government and charitable associations. More notably, while the number of disabled individuals who tend to join higher education institutions rapidly has increased in recent years, conditions for satisfying their basic and essential needs have been ignored. For an additional instance in practice, although the Government and other organizations of Vietnam recently have a greater awareness of the rights of community groups with disabilities, the policies represented towards inclusive development of them have not been much. If Vietnamese students with disabilities get less attention, it is because most suppose that the impaired belong to the pity group and often get sympathy from them much more than obtain themselves in terms of economic values. Furthermore, most thought that as there would not be any profit from these disabled groups, investing in establishing a standard building or providing separate products and services to serve only this audience group at every location is currently considered unfeasible and costly.

The next one could be demonstrated that learners with impairments are

experiencing a vast amount of difficulties and challenges in their daily lives. Firstly, they attempt to deal with seeking to assert their position in a modern, complex, and competitive world dominated by able-bodied people. On the other hand, they are trying to encounter problems of both physical and mental conditions, which create huge barriers to their accessibility to a higher education environment at present, especially for Vietnamese-impaired students.

The last identification could add that the consciousness of institutions and communities to the role of library position of libraries in education and training activities in particular, and society, in general, is still low now. As a result, leading to a lack of attention and adequate investment in all library work of universities toward disabled people is an inevitable result in Vietnam.

In closing, based on theoretically mentioned illustrations and the results of exploratory observations on the existing situations show that the factors, such as the helpfulness of the inclusive library, a shortage of related matters including awareness of communities and the policies of Government and educational institutions that could be considered to become big influences on the success of organizations, on the comprehensive development of the future of generally disabled people, and sustainable development of society in particular. Broadly speaking, innovation in the operational model that provides for learners with disabilities is necessary for every institution of higher education around the world, especially for Vietnamese organizations. Some recommendations are made to help those carry out further improvement and development orientation towards the promising future of users with disabilities in Vietnamese universities.

5. Recommendations for an overall improvement

It is necessary for all people with different forms of disabilities in the overall education environment to have smooth accessibility to every collection and service, as well as allow them to reach and get into the library building easily and safely. Especially, people in a wheelchair can reach all department blocks, and blind or partially sighted people can walk with a crutch or an assistive tool without encountering any obstacles on their way. Deaf people can find support or communicate with librarians. Individuals with an intellectual impairment can easily find information and other materials in many varieties of different formats. Therefore, the solutions that meet the needs of people with disabilities should suit every one of their profiles. Here, the paper focuses on three main sections in which accessibility for students with disabilities is taken into consideration including facility systems, products, services, and activities.

5.1.Physical facilities and the model of the library building

Accessible outside and inside the areas of the library building should be designed sufficiently. Wherever impaired users go, they need to have a smooth trip. Some typical components of this section can consist of pathways for wheelchairs, elevator systems, standard restrooms, stairs, special rooms, parking locations, automatic equipment, and modern technical devices including both software and hardware. All those come completely with the information and technology networks for connection. However, in order to complete these well, the funding source of the library is the determining factor in the development process.

- For the outside site, a disabled parking bay should be provided close to the library's gate, ramps with railing at its main gate, and a proper passage to the entrance with non-slippery ramps. In addition, it needs to be equipped with integrated auto-devices and auto-assistive technologies, such as

door openers, fire alarms, and telephones. This is considered to be useful for library users with disabilities to access the inner-physical sections of the library building.

- Some things related to this can be included for the inside side of the building. The first one is providing clear signs/symbols in pictogram formats. All are located in visible sections which help them have an easy look and understanding. The second one is that the piece of furniture should offer a variety of reachable items with compatible heights. It would be nice to place it close to or keep pace with the real abilities of disabled students to enable access to printed materials easily, as well as they can get assistance from the surrounding community immediately. Apart from that, other devices like audible and mobile alarm networks should connect with sound to hear announcements in case of emergencies, particularly for having window signs and induction loop systems to help confirm the identity of disabled people when they enter. There, the physical and ground space must be wide enough for them to move, leave, and get through. The last one is the structural infrastructure, library building blocks should equip a specialized computer system that is integrated and connected with a smooth network system to help librarians interact with library users with special needs through support services, regardless of the certain or remote location.

After all, making inclusive facilities and infrastructure are the considerable modifications, which both provide ready accessibility towards accommodating the level of satisfaction with needs and develop interpersonal skills regardless of whoever is in any regions, or territories.

5.2 Collections and services

Library collections and services without discrimination are power factors to greatly assist in overcoming the difficulties and obstacles faced, and impact on the overall and lifelong learning process of disabled users. Designing or the development of collections and services with non-discrimination not only reflects the diversity of forms in serving the community with disabilities but also gives equal opportunities in an inclusive educational environment. Anyone else who is eligible for services in the same way as other participants should not be denied service. Furthermore, it is also the way to further the opportunities and rights of multi-access to the policies, special educational programs, and government benefits, as well as gaining a large amount of wholly-owned knowledge and information resources that are delivered by the library. Thereby contributing significantly to the future development of their own life afterward.

Focusing on the state of current situations, such as the capability of financial and human resources, the characteristics and needs of various existing-user groups with disabilities to have a basis on improving and building available materials/adequate collections and services that serve the special needs related to the disabilities better. More especially in the digital age, apart from traditional categories and forms, library work should be of concern in providing electronic collections and digital services to individuals with disabilities. These are not only necessary for changing the ways of accessibility, increasing the degree of information literacy, and establishing a visual environment and education, but also reducing traveling time or visiting process to physical repositories and library spaces. Additionally with the advent of technical science, combining adaptive devices and assistive technology equipment plays an important role in facilitating easy utilization of library collections and services efficiently and optimally in diverse formats. Thus, the purpose is to enhance the quality and capability of using library systems fully and independently for students with disabilities in universities now, which helps them gain available benefits and get opportunities for

higher education environments and jobs in the future. Some suggestions related to library collections and services can be looked at below.

5.2.1. Collections

Specific collections consider it necessary to help users with disabilities interact with library information resources in university that may include many types of alternative materials in different formats such as leaflets, talking/audiobooks and newspapers and periodicals, easy-to-read books, Braille books, large print materials, E-books, tactile picture books, and video/DVD books with subtitles and/or sign language (Irval & Nielsen, 2005).

5. 2.2. Services

It is essential to see every person as a unique individual, regardless of their physical or mental conditions. The special corresponding service sections of the library for disabled people can be of great concern to educational institutions now. For instance, home delivery and outreach/mobile services assist students who have poor/serious conditions or live in remote areas and cannot take advantage of library physical resources directly. On top of that other typical services can also add that are sign language interpretation services which are used for storytelling, book presentations, talks, and discussion groups, among others. Something else that needs to be considered is a specialist reading service for patrons with reading difficulties, and a consultation service for providing orientations to overcome barriers encountered in library buildings. In addition, a range of other services can be on, such as economic reference service for providing pin-pointed, exhaustive, expeditious ones based on questions asked by library users with disabilities at the same time via email/SMS/Apps, loan library service for responding to the requirements of materials from other cooperating libraries, a circulation service for offering accessibility to all course and reference books in a special area where are spread out from others, inside equipped with facilities and assistive technologies, and last is the training service to help them learn on how to use library in certain places or at home through website or other support tools.

5.3 Activities

5.3.1. Training and education

All staff need to be knowledgeable about various disabilities and how to assist users best. Training and education aim to further increase the level of employee's awareness and understanding of forms of library users with disabilities. In sympathy with many active assistance in physical/mental obstacles that impaired learners experience is essential, especially for supporting them to have certain orientations to the specific studying purpose that they intend to in the future. This proves also partly their responsibility for contributing to the society's overall growth. Some examples of the actions of training and education for librarians follow.

- By sending staff in-depth courses on the special needs of disabled groups. Thorough specialists' lessons in medical and psychological subjects will help them have more exemplary behavior and be favorable toward disabled learners;
- Institutions of higher education including private facilities and government entities provide staff training programs related to the library field by closely cooperating with vendors that supply specialized facilities, in particular for those who work in special departments. Through the opportunity to practice practical skills, which help them learn more about how to use adaptive equipment professionally, also have the ability to take advantage of assistive technologies optimally in every era of ICT, especially for gaining much more skills at serving user groups with disabilities;
- Strongly encouraging staff to attend workshops and conferences that are held

by educational institutions or sponsors through discussion on the subject of people with disabilities, in particular for those who are studying in university. As a result of gaining practical experience in understanding the special needs of learners with disabilities, employees can make large contributions to developing and having the complete works of the inclusive library in the early future.

5.3.2 Working with partnerships

Cooperation activities are essential for all libraries to enhance and expand their works, which contribute to achieving enormous success further in assisting and serving impaired learners, as well as constituting big improvements to their lives in both the present and future. A practical demonstration of the difficulties and obstacles that both parties struggle with, such as lack of the budget to invest in constructing library buildings and training staff, lack of specialized equipment and modern technologies that are not always considered adequate with giving the complete satisfaction of special needs, and lack of leaders' knowledge about how to implement fully policies towards people with disabilities, particularly, for following the rules of library-related law closely. Again, it could be asserted that the inclusive library contributes a very crucial part to providing equal opportunities for disabled learners in the same way as non-disabilities, for staff who get stuck in a limited condition. A clear explanation for this is one of partnerships involved directly in collaboration with library work, such as

- Some institutions that could be first mentioned are national and international institutions of higher education, entities of non-government or government, and donors. Their presence plays a vital part in giving disabled people a chance to improve their quality of life and the process of their long-life learning, for staff to enhance their competency and skill toward getting a better future job as well. Scholarship programs, projects, disabled support, and right funds are typical examples;
- The next partners can add that are philanthropic organizations, sponsors, or companies working in the field of ICT. Calling for the grant aid of budgets, specialized facilities, and physical infrastructural improvement is to contribute to the inclusive and sustainable development of library building in a model of a new society. In addition, this is also done in the same way that libraries should work with different publishers to create special collections for users with disabilities in various formats;
- Especially for local government agencies, the place that gathers experts and legislators who are in a good position to persuade the policymakers to pay attention to the issues of impaired people. Those who not only can help libraries draft laws to improve the situation of those with disabilities, to have a change in a positive attitude towards the good value of inclusive libraries for community groups with disabilities in the local regions, and also take part in making adjustments in more coherent policies and regulations that applied to institutions of higher-parent education, in particular for learners with impairments according to the substantive law of the Vietnamese Government;
- Then, establishing strong connections with community groups working in other departments of the school, such as lectures, faculties, departmental staff, and outside partnership libraries. Their attendance is to offer additional assistance to human resources for libraries in dealing with all actual barriers of the disabled immediately or anywhere, and also help reduce pressure on librarians who lack practical experience in serving users with disabilities;
- The last one is enterprises or companies. Cooperation with all is to bring impaired

communities career opportunities that suit their capacities, and also help them look for much more the ability of competition in the workplace market, as well as earn a high level of salary after graduation. It could be said that consultative and vocational guidance is essential for the disabled to have many further chances to access the placement market, and also help them have more understanding of companies' work in order to come up with the right decisions on their future jobs.

5.3.3 Other indoor activities

Providing indoor activities contributes to developing personal issues of most academic students with disabilities, such as studying, entertainment, research, and other purposes. Based on defining characteristics of the needs, library operations should expend many more special events and programs than what did. Above all that, they always feel to be treated equally without discrimination as non-disabled people when all their requirements ask for. Some activities inside the building recommended the following

- The first action that can be added is book clubs. This helps to improve significantly the reading capacities of user groups with intellectual and vision disabilities through volunteers with non-disabilities;
- Something else that it can comment on is the annual workshops and conferences. These events should happen in the library at least once a year. As a reason for this, meeting and communicating with the specialist groups in the different fields is to make disabled students feel more openly and confident when coming up with questions, or needing any assistance. More specifically, these activities present them opportunity access to library products and services much more easily than they did before;
- The last one is holding an exhibition/display of materials based on related events or the chosen subjects as the library's frequent activity. Conducting this practice is a good way to introduce all existing and new resources to patrons, regardless of whose disabled group are. On the other hand, this also facilitates their understanding of how to find all library materials placed on any shelves, or in any physical sections of the library including both on and off-line sites. What currently almost all libraries in parent universities have not done yet, at least.

In most cases, it demonstrates that the appearance of the overall library makes more specific contributions to the sustainable development of all aspects of impaired communities. Namely, the community groups of disabled students will leave the gap between disabled people and non-disabled ones, particularly for accessibility to values and benefits provided, and give assistance with the process of their long-term learning in an environment of inclusive education. In addition to this, it supports those who overcome barriers and obstacles that they are experiencing, as well as gain something better in the future. Most importantly, as a further awakening of consciousness regarding library leaders, educational communities, staff, users with non-disabled, and other stakeholders in order to be treated with respect for the special needs of disabled individuals when they come to and ask to use all library things, especially for awareness of roles and responsibilities of relevant parties for more acutely understanding of the various characteristics of disabled people. For instance, bring the attention of organizations and the government to the disabled community in society, particularly for feasible policies and law documents. Surely in the near future, if possible, the inclusive library will be a place that can exclude the social prejudice against the disabled group, which contributes substantially to the independent development of personal characteristics with the part of impairments.

6. Conclusion

An inclusive library goes beyond existing regulations to provide for disabled students to seek more excellence in all aspects related to special needs, such as physical facilities and infrastructure, collections and services, and associated activities. Through it, all previous barriers and challenges of users with disabilities can be overcome easily, and they no longer feel anxious in the face of all obstacles around them. More positively, a place that helps them take advantage of all values of resources in society, and also gives them a chance to go beyond their capability in order to improve the quality of their future life. Again, the inclusive library is very necessary for Vietnamese students with disabilities to seek equal treatment as non-disabled now. Especially for parent universities, establishing this type should turn more attention to forms of student's student-impaired features, as well as create more favorable conditions for them to gain more accessibility to policies and benefits of inclusive education in the same way as non-disabilities.

Reference:

- Bodaghi, Nahid Bayat, Zainab, A.N. (2013). *Accessibility and facilities for the disabled in public and university library buildings in Iran*. ResearchGate. https://www.researchgate.net/publication/258140630_Accessibility_and_facilities_for_the_disabled_in_public_and_university_library_buildings_in_Iran
- Choughule, Pradnya (2007), "Role of information services in Corporate Libraries", *5th convention PLANNER*, December 7-8, 160-165.
- EnableMe Kenya (n.d.). *The 7 Major Types of Physical Disabilities.* https://www.scribbr.com/apa-examples/website/
- General Statistics Offices (2018), *National survey on people with disabilities 2016*, Ha Noi: Statistical Publishing House. Source: E-book.
- Irval, Birgitta, Nielsen, Gyda Skat (2005), "Access to libraries for persons with disabilities - CHECKLIST". *IFLA professional Reports*, No. 69. Retrieved freely from the internet source.
- Moisey, Susan D. (2007), "The inclusive libraries that enhance the access of persons with developmental disabilities to information and communication technology", *The Developmental Disabilities Bulletin*, Vol. 35, No. 1 & 2, p. 56-71.
- Nguyen, Minh Ngoc (2022), "Number of university students in Vietnam 2016-2020", *Statistic Website*. Retrieved from https://www.statista.com/statistics/815091/number-of-university-students-in-vietna/
- Nguyen, Thuy Anh (2018), "Inclusive learning environment for students with disabilities in Vietnam's Higher Education", *VNU Journal of Science: Policy and Management Studies*, Vol. 34, No. 4 (2018), p. 51-64.
- Rayini, Junaid (2017), "Library and information services to the visually impaired persons", *Library Philosophy and Practice (e-journal)*, 1510. Retrieved from http://digitalcommons.unl.edu/libphiprac/1510.
- Rayini, Junaid (2017). Library and information services to the visually impaired person. *Library Philosophy and Practice (e- journal)*, 1510. https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=4313&context=libphilprac
- Sharif, Naveed, et al., (2020). "A guide to Inclusive libraries as part of Anti-racism toolkit", *NHS*, Version , 7th December. Retrieved from a free source of google.
- Smadi, O. Y. (2022). The satisfaction level of students with disabilities with library and information services. *International Journal of Education in Mathematics, Science, and Technology* (IJEMST), *10*(2),

436-457.
https://doi.org/10.46328/ijemts.2352

- Wikipedia, "Academic library", *Wikipedia: the free encyclopedia website*. Retrieved from https://en.wikipedia.org/wiki/Academic_library

WEBOMETRIC ANALYSIS OF WEBSITES OF CENTRAL UNIVERSITIES OF EASTERN INDIA: A STUDY

Anubhaw Kumar Suman
PhD Research Scholar
Department of Library & Information Science
Mahatma Gandhi Central University, Motihari, Bihar, India
Email: sumanubhaw@gmail.com
&
Dr. Madhu Patel
Assistant Professor
Department of Library & Information Science
Mahatma Gandhi Central University, Motihari, Bihar, India
Email: madhupatel@mgcub.ac.in

Abstract

The study presents the webometric analysis of the websites of 7 Central Universities of the Eastern India region. The study aims to identify and evaluate the web presence, domain name, Domain Authority, Page Authority, Google PageRank, Rich files, Language, and Social Media presence of the selected websites under study. To accomplish the objectives of the study, the Google search engine, some search engine optimization (SEO) tools, and manual website visits have been used to analyse the websites under study. Major findings of the study include that all universities' websites have the same Google PageRank value i.e. 4, the website of Visva Bharti has the highest Domain Authority, Central University of Jharkhand's website has the highest Page Authority, the website of Nalanda University is the single website which uses only one language, i.e. English. All universities have their presence on social media at different platforms. The study is unique and latest in the website analysis category. Very few webometric studies have been conducted on the universities of the Eastern region of India. This study is an effort to fill this gap. The present study concluded with some suggestions that will be helpful for Policy-makers and Website developers to enhance their websites and their visibility on the Web.

Keywords: Webometrics; Web Analysis; Domain Analysis; Search Engine Optimization; Moz; Rich Files; Academic Institutions

1. Introduction

After Bread, Cloth, Shelter, and Library, the Internet has become the need of today's information society. Nowadays, the Internet is a significant and fastest medium of communication and information transmission. The World Wide Web (WWW) has become a crucial source of information for study, research and academic activities. It is the outcome of Information and Communication Technology (ICT). The World Wide Web is the reason behind the emergence of Webometrics. Earlier, people mostly used the Internet for scholarly communications, which increased the range and slowly vanished the geographical boundaries in the distribution of research publications. We get any information from the Web through websites. A website gives 24/7 accessibility and convenience in accessing from anywhere, at any time. It is also useful for remote users to know about the organization without visiting physically, and it increases credibility among the users or visitors. To evaluate the websites, 'Webometric' is a widely used form of

bibliometric approach which deals with the metrics of websites.

In 1997, Tomas C. Almind and Peter Ingwersen first used the term "Webometrics". "Webometrics" consists of two words 'web' and 'metrics'. Webometrics is concerned with measuring aspects of the Web i.e. websites, web-pages, words in web-pages, parts of web-pages, hyperlinks, web search engine results etc. In the Webometric study, analysis of websites is performed in various ways. The characteristics and capabilities of the websites are also checked to satisfy the end-users globally through the Web. The webometrics study helps both Computer Science and Information Science.

2. Literature Review

Dinda & Rahman (2023) did a webometric analysis of the websites of 9 Library and Information Networks in India. Various data from the websites including page structure, quality, performance score, SEO score, external and internal links, domain analysis and website traffic were evaluated for the study. It was found that INFLIBNET, NICNET, ERNET, ADINET, and NKN are the most popular networks in India among them.

Meghwal, Chaparwal & Rajput (2023) studied the top 10 University Websites in India according to NIRF (National Institute of Ranking Framework) Ranking 2023. The major findings of the study were that the Indian Institute of Science University website had the highest Domain Authority (DA) score of 62 out of 100, and the website of Amrita Vishva Vidhyapeetham University has the oldest Domain Name (PA).

Nandi, Das & Mandal (2023) did a webometric study of National level Divyangjan Institutes of India. Some webometric indicators such as total web page count, in-links, out-links, bounce rate, number of rich files, etc. were used to conduct the study. Institute NILD is the highest-ranked Web Impact Factor (in-link). According to Web Indicators for Science, Technology and Innovation Research (WISER), the NIEPMD institute had the highest webpage value.

Paul & Singh (2023) evaluated the websites of 24 Indian Institute of Information Technologies (IIITs). The web presence, domain authority, page authority, and Google PageRank were investigated in the study using search engine tools Moz and Google PageRank. It was found that IIIT, Allahabad has the highest domain and page authority among all, and all websites had the same domain name of ".ac.in".

Uttkarsh, Sen & Krittika (2022) analysed the websites of 64 Indian Council of Agricultural Research (ICAR). Researchers checked the web presence, websites' languages, analysed the domain and drew a network diagram of linked ICAR-Institutions. For visualization of websites, ScoSciBot4 were used and it was found that ICAR ICAR Central Institute of Freshwater Aquaculture (CIFA), Bhubaneswar was linked with 6 other institutes' websites.

Uttkarsh & Sonkar (2021) did a webometric analysis of National Importance Libraries and Archives of India. Researchers analysed the websites on the basis of rich files, network diagram, social media presence and languages. Google Search Engine, SocScibot4, and Alexa Internet tools were used in the study to collect the required data. The study found that Tibetan Studies has the lowest bounce rate (50%), and the National Archives of India has the highest number of rich files, i.e. 506. The National Archives of India is connected to 4 other websites.

Verma & Brahma (2017) examined the websites of 10 Central Universities situated in North-East India. The study analysed the Web Impact Factor (WIF) and calculated the link and web pages of the websites of Central universities in North-East India. The study found that Tezpur University secured 1st place with the highest Domain and Page Authority. Meanwhile, Mizoram University leads with the highest Total Internal Links and Internal Equity-Passing Links. The WIF of Mizoram University was the highest among all.

3. Scope of the Study

The scope of the present study is limited to the websites of the central universities of the eastern states of India. Presently there are seven (7) central universities situated in the eastern states, including Bihar (4), Jharkhand (1), Odisha (1) and West Bengal (1) [Source: (https://www.ugc.ac.in/oldpdf/Consolidated_CENTRAL_UNIVERSITIES_List.pdf). These seven universities with their respective states are given below in Table 1:

Table 1: Showing the List of Central Universities of Eastern India

Sl. No.	States of Eastern India	Central University
01.	Bihar	Central University of South Bihar, Gaya
02.		Mahatma Gandhi Central University, Motihari
03.		Dr. Rajendra Prasad Central Agricultural University, Samastipur
04.		Nalanda University, Nalanda
05.	Jharkhand	Central University of Jharkhand, Ranchi
06.	Odisha	Central University of Odisha, Koraput
07.	West Bengal	Visva Bharati University, Shantiniketan

4. Objectives of the Study

(i) To identify the web presence of the universities under study.
(ii) To identify the domain of the universities' websites under study.
(iii) To rank the websites on the basis of Rich Files using Google query syntax.
(iv) To evaluate the number of Domain Authority (DA), and Page Authority (PA) of the websites.
(v) To find out the Google PageRank of the websites under study.
(vi) To find out the languages used by university websites under study.
(vii) To find the presence of the universities on social media and their engagement on social media.

5. Methodology

The current study is intended to analyse the 7 websites of Central Universities of Eastern India. Manual website visits, Google search engine advanced query syntax (www.google.com), Search Engine Optimization (SEO) tools viz., Link Explorer (https://moz.com/link-explorer) and Check PageRank (https://checkpagerank.net/) were used to collect the required data. The data required for the present study was collected from January 08, 2024 to January 10, 2024.

6. Results and Discussion

6.1 Web Presence

The online existence of any individual, organisation, institution, company, or any other entity on the World Wide Web (WWW) is known as their web presence. This web presence can be made in numerous ways and by numerous people, thus to distinguish them from one another. Each web presence has its own unique web address known as Uniform Resource Locator (URL). Table 2 presents all seven central universities with their website URLs, which shows their presence on the World Wide Web or simply the Web.

Table 2: Availability of Websites of Central Universities of Eastern India

S. N.	Universities	Website Links
1.	Central University of South Bihar (CUSB)	https://www.cusb.ac.in/
2.	Mahatma Gandhi Central University (MGCU)	https://mgcub.ac.in/
3.	Dr. Rajendra Prasad Central Agricultural University (RPCAU)	https://www.rpcau.ac.in/
4.	Nalanda University	https://nalandauniv.edu.in/
5.	Central University of Jharkhand (CUJ)	https://cuj.ac.in/
6.	Central University of Odisha (CUO)	https://cuo.ac.in/
7.	Visva Bharati University	https://visvabharati.ac.in/index.html

From Table 2, it is observed that all central universities of eastern India have their web presence with their own website. After visiting all individual websites, it is also found that all websites are properly functional and updated.

6.2 Domain Analysis

A domain name is the unique name of a website. It is an easy-to-remember address used to access websites on the World Wide Web (WWW).

Top-Level Domain (TLD): In Domain Name System (DNS), a top-level domain (TLD) is the last part that comes just after the 'dot' in the domain name or simply any URL. TDL is the last segment of text that follows the final dot (.) of a domain name. For example, in the domain names 'facebook.com' and 'wikipedia.org', ".com" and ".org" are the TLDs respectively. Similarly, '.edu', '.net', '.gov', '.ac.in', and '.nic.in' are the other popular examples of TLDs. Top-level Domain is also known as suffixes. Each and every TLD has its own registration under the Internet Corporation for Assigned Names and Numbers (ICANN).

There are different types of TLDs, but it is mainly categorized into two parts: -

i. **Generic Top-Level Domains (gTLDs):** Generic top-level domain is one of the most popular TLDs. gTLDs are available for registration. ICANN used to heavily restrict the creation of new gTLDs, but in 2010 these restrictions were relaxed. Now there are hundreds of lesser-known gTLDs, such as '.xyz', '.top', and '.loan'. Earlier, there were only seven generic top-level domains (gTLDs), including .com, .gov, .edu, .net, .org, .int, and .mil.

ii. **Country-code Top-Level Domains (ccTLDs):** Country-code Top-level domain used for the representation of country. Each ccTLD is associated with a specific country. Some examples of ccTLDs are '.in' for India, '.au' for Australia, '.uk' for the United Kingdom, and '.jp' for Japan.

Table 3: URL Domain Analysis of the Websites of Central Universities of Eastern India

S.N.	Universities	Website Links/URL	Top-Level Domain (TLDs)	
			gTLDs	ccTLDs
1.	CUSB	https://www.cusb.ac.in/	.ac	.in
2.	MGCU	https://mgcub.ac.in/	.ac	.in
3.	RPCAU	https://www.rpcau.ac.in/	.ac	.in
4.	Nalanda University	https://nalandauniv.edu.in/	.edu	.in
5.	CUJ	https://cuj.ac.in/	.ac	.in
6.	CUO	https://cuo.ac.in/	.ac	.in
7.	Visva Bharti	https://visvabharati.ac.in/index.html	.ac	.in

gTLD= Generic Top-Level Domain; ccTLD= Country Code Top-Level Domain

Table 3 shows the domain name or Top-Level Domains (TLDs) of the websites of central universities of eastern India. Here, gTLDs and ccTLDs are two sub-divisions of the TLDs. Among all these seven universities, six universities use the same Generic Top-Level Domain (gTLD) name of ".ac", while only Nalanda University uses ".edu". All these universities are situated in India, so they use ".in", Country Code Top-Level Domain (ccTLD). The domain name ".ac.in" represents the academic institutions' websites in India, and the domain name ".edu.in" represents the educational institutions' websites in India.

6.3 Rich Files

Rich files are various types of file formats of electronic documents. For this study, there are four rich file formats: viz. '.doc', '.pdf', '.ppt', and '.ps' were selected, retrieved and tabulated. Google, which is the largest and most popular search engine, was used to collect raw data for this research to analyse the rich files of the selected websites. Google provides some query syntax to extract data from the Web. The four syntaxes used to acquire the necessary data are shown in Table 4.

Table 4: Google Query Syntax for Rich Files

S. N.	Types of Files	Syntax
1.	Microsoft Word (.doc)	site: URL filetype:doc
2.	Adobe Acrobat (.pdf)	site: URL filetype:pdf
3.	Microsoft PowerPoint (.ppt)	site: URL filetype:ppt
4.	Adobe PostScript (.ps)	site: URL filetype:ps

.doc= word document files; .pdf= portable format files; .ppt= power point presentation; .ps= PostScript

Table 5: Rich Files of the Websites of Central Universities of Eastern India

S. N.	Universities	.doc	.pdf	.ppt	.ps	Total	Rank
1.	CUO	4,670	24,80,000	3	0	24,84,673	1
2.	CUJ	189	1,82,000	0	1	1,82,190	2
3.	Visva Bharti	41	82,900	0	0	82,941	3
4.	CUSB	3	21,900	0	0	21,903	4
5.	MGCU	1	7,860	0	0	7,861	5
6.	RPCAU	8	7,300	0	0	7,308	6
7.	Nalanda University	3	2,060	0	0	2,063	7

Table 5 is explicit that most of the rich files are pdf format files. Central University of Odisha (CUO) with a total number of 24,84,673 rich files, placed in the first rank which include 24,80,000 pdf files, 4,670-word (.doc) files and only 3 ppt files. The second rank was secured by the Central University of Jharkhand (CUJ) with a total number of 1,82,190 rich files, including 1,82,000 pdf files, 189-word (.doc) files and single .ps files. Similarly, Visva Bharti ranked third with a total of 82,941 rich files, including 82,900 pdf files and 41 doc files.

6.4 Data Collection through Open Site Explorer

Open Site Explorer is a product of Moz.com. It is a free search engine optimization (SEO) tool. Link Explorer (https://moz.com/link-explorer) is the current version of Open Site Explorer, and it uses new tools to analyse the links. Link Explorer uses a

"Dotbot" crawler to crawl the Moz collection of Google Search Engine Result Pages (SERPs). Using Open Site Explorer, the data of domain authority and page authority of 7 central universities' websites under study was collected on January 08, 2024.

Domain Authority measures the strength of entire domains or websites; while Page Authority measures the ranking strength of a single page of the website. Both metrics are calculated using the same algorithm or methodology. Google does not consider Domain Authority and Page Authority for website ranking.

6.4.1 Domain Authority

Domain Authority (DA) provides the rank or performance of any specific website on Google search engine result pages (SERPs) at the domain level. Domain Authority score ranges from 1 to 100. Thus, the websites with high domain authority will be on the top of SERP. The websites having high-quality external links score high domain authority. Webmasters use domain authority to compare their own websites with other competitive websites.

Table 6: Domain Authority of the Websites

S. N.	Universities	Domain Authority	Rank
1.	Visva Bharati University	42	1
2.	Nalanda University	39	2
3.	Central University of Jharkhand	36	3
4.	Mahatma Gandhi Central University	35	4
5.	Central University of Odisha	35	4
6.	Central University of South Bihar	34	5
7.	Dr. Rajendra Prasad Central Agricultural University	34	5

The rank of 7 websites of Central Universities of Eastern India as per Domain Authority (DA) is shown in Table 6. Visva Bharati University got the first rank with the highest domain authority of 42; after that, Nalanda University got the rank 2 with domain authority of 39, and Central University of Jharkhand got the third rank with domain authority of 36. Mahatma Gandhi Central University and Central University of Odisha both got the rank fourth with domain authority of 35. The Central University of South Bihar and Dr. Rajendra Prasad Central Agricultural University both ranked fifth with the lowest domain authority value of 34.

6.4.2 Page Authority

Page Authority (PA) is a score developed by Moz. It provides the rank or performance of a specific page of any website on Google search engine result pages (SERPs) at the page level. Page Authority scores range from 1 to 100. Thus, the specific page that has a high Page Authority will be on the top of SERP.

Table 7: Page Authority of the Websites' Homepage

S. N.	Universities	Page Authority	Rank
1.	Central University of Jharkhand	46	1
2.	Nalanda University	45	2
3.	Visva Bharati University	45	2
4.	Central University of Odisha	44	3
5.	Central University of South Bihar	43	4
6.	Mahatma Gandhi Central University	42	5
7.	Dr. Rajendra Prasad Central Agricultural University	42	5

The rank of 7 Central Universities of Eastern India websites as per Page Authority (PA) of their homepages is shown in Table 7. The Central University of Jharkhand got the first rank with the highest Page Authority of 46. Nalanda University and Visva Bharti both secured the second rank with Page Authority of 45; then Central University of Odisha got the third rank with Page Authority value of 44. The Central University of South Bihar got the fourth rank with Page Authority of 43. Mahatma Gandhi Central University and Dr. Ranjendra Prasad Central Agricultural University both got the fifth rank with the lowest Page Authority value of 42.

6.5 Google PageRank

Google PageRank was developed by Larry Page and Sergey Brin, who were the co-founders of the American multinational giant technology company Google. Google PageRank is useful in ranking web-pages on Google search result pages. The algorithms of Google PageRank consider hyperlinks from numerous websites to a single particular website as a vote of the popularity of that particular website, so that website will have high PageRank on the scale of Google PageRank, which ranking is based on the range or scale from 1 to 10.

Google PageRank was patented in the year 1998 but Google has not renewed the patent after the expiration of the patent in the year 2018. Thus, there are a number of websites that provide Google PageRank using the algorithm that is used by Google to calculate PageRank of the websites on Google search result pages. Here, Check PageRank (https://checkpagerank.net/) is used to calculate the PageRank of the 7 websites of central universities of eastern India.

Table 8: Google PageRank of the Websites of Central Universities of Eastern India

S. N.	Universities	Google PageRank
1.	Central University of South Bihar (CUSB)	4/10
2.	Mahatma Gandhi Central University (MGCU)	4/10
3.	Dr. Rajendra Prasad Central Agricultural University	4/10
4.	Nalanda University	4/10
5.	Central University of Jharkhand (CUJ)	4/10
6.	Central University of Odisha (CUO)	4/10
7.	Visva Bharati University	4/10

Table 8 shows the Google PageRank of the websites of the central universities of eastern India. It is found that all university websites under study have the same Google PageRank of 4 out of 10.

6.6 Language

India is a land of a wide range of cultural, religious and linguistic groups, each of which speaks a different language. It makes India a multilingual nation in the world. There are approximately 1500 languages, including dialects spoken throughout the country and among these 22 scheduled languages approved by the constitution of India to use any of them as an official language.

The websites of central universities may have visitors from all over India as well as abroad. So, the websites of central universities need to have multilingual content, as it will be beneficial for visitors from different regions, nations and parts of the globe.

Table 9: Language of the Central Universities' Websites of Eastern India

S. N.	Name of Universities	Languages		
		English	Hindi	Other
1.	CUSB	✓	✓	✗
2.	MGCU	✓	✓	✗
3.	RPCAU	✓	✓	✗
4.	Nalanda University	✓	✗	✗
5.	CUJ	✓	✓	✗
6.	CUO	✓	✓	✓
7.	Visva Bharti	✓	✓	✓

Table 9 depicts the record of language used on the websites of central universities of eastern India. In the above table, we have categorized the languages into three categories as: English, Hindi, and Others. It was found that the websites of all universities under study are in English language. Out of 7 universities' websites, except Nalanda University all six universities were also using Hindi language content on their websites, and only two universities, namely Visva Bharti and Central University of Odisha (CUO) were also using other languages on their website to reach out to the maximum people. CUO has some content in Odia language on its website; while Vishwa Bharti uses a multi-language option service on its website. So, it was easy to view content in many regional as well as foreign languages on the Visva Bharti website. The website of Nalanda University is the single website among the all which is available in English language only. Thus, it was also found that English is the most dominant language on the websites of the universities, and after that, Hindi stands in the second position.

6.7 Social Media Presence

Social media helps organisations in building relations with their audiences. Social networking sites like Facebook, YouTube, Twitter, and Instagram have become vital tools for communication in the present Information Communication Technology (ICT) era. Today, most people use social media for their various purposes. So, universities, organizations, institutions, government bodies, and others use social media to reach out to their audiences quickly throughout the globe without any geographical limitations.

For the social media presence of the selected universities on Facebook, YouTube, Twitter, Instagram, and LinkedIn are considered for the study as these social platforms are highly used.

Table 10: Social Media Presence of Central Universities of Eastern India

S. N.	Universities	Facebook	YouTube	Twitter	Instagram	LinkedIn
1.	CUSB	6.6K	2.48K	2,942	**1,904**	-
2.	MGCU	15K	1.73K	**6,916**	-	**2K**
3.	RPCAU	6.8K	2.74K	322	-	735
4.	Nalanda University	**10K**	-	5,184	1,595	-
5.	CUJ	5.8K	411	1,160	-	-
6.	CUO	1.9K	-	2,121	-	242
7.	Visva Bharti	9.1K	**5.38K**	500	-	-

From Table 10, it was found that out of 7 selected universities, all universities have their presence on Facebook and Twitter while 5 universities have their presence on YouTube. 3 universities including MGCU, RPCAU, and CUO have their presence on LinkedIn and only 2 universities, CUSB and Nalanda University have their presence on Instagram. With 10K followers, Nalanda University has the highest number of followers on Facebook. Mahatma Gandhi Central University (MGCU), Motihari has the highest number of followers on Twitter and LinkedIn, i.e. 6,916 and 2K respectively. Vishwa Bharti has the highest number of followers or subscribers on YouTube, i.e. 5.38K and Central University of South Bihar (CUSB), Gaya has the highest number of followers on Instagram, i.e. 1,904.

7. Major Findings

- All central universities of eastern India have a web presence. All universities have a properly functional and up-to-date website.
- Among all 7 websites of central universities of eastern India, 6 universities' websites namely CUSB, MGCU, RPCAU, CUJ, CUO, and Visva Bharti have ".ac.in" Top-Level Domains (TLDs). Only Nalanda University has ".edu.in" TLD comprising '.edu' as generic TLD (gTLD) and '.in' as Country Code TLD (ccTLD).
- The pdf file format is the most dominant rich file. The Central University of Odisha ranked first with a total number of 24,84,673 rich files including 24,80,000 pdf files. Nalanda University ranked last with the least rich files.
- The Domain Authority of Visva Bharati University is the highest with 42 and ranked first among the websites; followed by Nalanda University with Domain Authority 39, which ranked second; and Central University of Jharkhand with 36 ranked third.
- The Central University of Jharkhand is at the top most with 46 Page Authority, ranked first among the websites; followed by Nalanda University and Visva Bharti with 45 and both ranked second. The Central University of Odisha ranked third with Domain Authority value of 44.
- All university websites have the same Google PageRank value of 4 out of 10.
- English is the dominant language among the websites. English is used by all the universities' websites. Nalanda University does not use the Hindi language, rest of the universities use the Hindi content on their websites.
- Nalanda University has the highest number of followers on Facebook i.e., 10K. Visva Bharti has the highest number of followers or subscribers on YouTube i.e., 5.38K. Mahatma Gandhi Central University has the highest number of followers on Twitter and LinkedIn viz. 6,916 and 2K respectively. Only Central University of South Bihar and Nalanda University have their presence on Instagram with 1,904 and 1,595 followers respectively.

8. Conclusion and Suggestions

This study gives a basic idea and information regarding the websites of 7 Central Universities of Eastern India. The study aimed to check the web presence of the universities; identify the domains of the websites; rank the websites on the basis of rich files, domain authority, and page authority. The study also evaluates the Google PageRank of the websites, content languages, and at last social media presence and engagement of the universities. From the above findings, it is concluded that all universities have a web presence but their performance is not par. only Nalanda University is using ".edu.in" Top-level Domain, while the rest all are using

".ac.in". The study observed that websites have neither good nor bad value of Domain & Page Authority; if it may increase that will increase their search rank on search engines like Google. Only Visva Bharti uses multi-language option on its website including regional and foreign languages. All universities should try to incorporate this feature on their websites to maximize visitors and website visit count. Google PageRank also needs to be improved on all universities' websites. Almost all universities under study have their presence on social media via different platforms. But Nalanda University and the Central University of Odisha are not available on YouTube till date. The study recommends that both universities should make their presence on this platform too, so that they can share their academic activities through this video streaming channel. Webmasters and Policymakers may take advantage from this study and design the websites more informative and attractive so that people visit the websites frequently.

References

- Meghwal, J., Chaparwal, N., & Rajput, P. S. (2023). A webometric study of NIRF ranking 2023 top 10 university websites of India. *Technofame: A Journal of Multidisciplinary Advance Research, 12*(1), 118-129. Retrieved from https://www.researchgate.net/publication/373512103_A_Webometric_Study_of_NIRF_Ranking_2023_top_10_University_Websites_of_India
- Nandi, S., Das, A. K., & Mandal, S. (2023). Web presence of national level Divyangjan Institutes of India: A webometric study. *Journal of Indian Library Association, 59*(2), 66-78. Retrieved from https://www.ilaindia.net/jila/index.php/jila/article/download/1756/386
- Paul, D. P., & Singh, A. (2023). Evaluation of websites of Indian Institute of Information Technology: A webometrics analysis. *Journal of the Oriental Institute, 72*(1), 35-47.
- Rahman, Z., & Dinda, G. (2023). Websites of library and information network in India: A webometric analysis. *Library Philosophy and Practice (e-journal), 7672*. Retrieved from https://digitalcommons.unl.edu/libphilprac/7672
- Uttkarsh, & Sonkar, S. K. (2021). Webometric analysis of national importance libraries and archives under the Ministry of Culture, India. *Library Philosophy and Practice (e-journal), 6400*. Retrieved from https://digitalcommons.unl.edu/libphilprac/6400
- Uttkarsh, Sen, A. K., & Krittika. (2022). A webometric analysis of website of Institutes of Indian Council of Agricultural Research. *Shodhasamhita, 9*(8), 160-173.
- Verma, M. K., & Brahma, K. (2017). Websites of Central Universities in North East India: A webometric analysis. *DESIDOC Journal of Library & Information Technology, 37*(3), 186-191. Retrieved from https://publications.drdo.gov.in/ojs/index.php/djlit/article/view/10906

STUDENTS PERCEPTION TOWARDS INFORMATION RETRIEVAL VIA SMARTPHONE : A STUDY OF UNIVERSITY OF JAMMU

Amrita Sharma
Library Assistant
Government Degree College Ghagwal
Jammu & Kashmir
Email: amusharma11321@gmail.com
&
Dr. Meghna Dhar
Assistant Professor, Department of Library and Information Science,
University of Jammu (J&K)-180006
Email: dharmeghna@rediffmail.com

Abstract

The main aim of this research paper is to examine and analyze the perception of user towards the use of smartphone's in retrieving information with special reference to the University of Jammu. Smartphones are bringing the web to our door steps thus enabling the retrieval of required information from anywhere at any time. The study included total 145 participants. Google forms were distributed online to gather the viewpoint of the participants. The data was analyzed via MS-Excel. The study revealed that majority of the participants were females i.e. 73.1% and rest were male i.e. 26.9%. Further, the study revealed that majority of the participants i.e. 136 owned android phones in comparison to the others. Also, according to the results majority of the students use the smartphones with the purpose of retrieving information/ knowledge. In comparison to the use of smartphone with traditional documents majority of the participants claimed that although being more expensive, yet it is more informative and time-saving. Despite of these advantages majority of the participants i.e. 73.1% students claimed that smartphones cannot replace libraries.

Keywords: Data, Information, information retrieval, University of Jammu, Smart phones, Libraries

1. Introduction

The modern era indicates the need and importance of information. Therefore, "right to information" is universal. We, the human beings are in the information age. From early days to modern time information was, is and will continue to be the need of an hour. As information plays a central role in every information society, so does the knowledge and wisdom revolves around it. Information is required in every speck of life whether it is in concern of terrorism, or developing a vaccine for corona virus or it is about the economic growth of a country.

The first use of the word "information" is dated back to 14th century. This (information) English word is derived from the Latin word "informatio" which is again derived from the word "informare". The word informare means "to shape an idea of".The basic fundamental unit of information is data. Data are simple facts, or figures or raw material for information. When this data is processed, arranged in logical sequence and becomes meaningful in order to be presented or communicated to or by someone, it becomes information. The word "data" is supposed to be first used in English in 1640s. Moreover, data is Latin word and plural of

"Datum". The data can be either collected from the primary sources, secondary or tertiary sources. Thus, we can say that data are the building blocks of information. This can be better understood by the following example, total number of male students in M.LIS course or number of persons infected by covid-19 in Jammu region. Thus, when this raw material (data) is collected processed, interpreted and finally presented in a logical sequence to form a meaningful structure becomes information. Large amount of information is generated every second in every field but particularly in science and technology which needs to be updated regularly as well as timely. This sudden or rapid increase in the amount of information is termed as "information explosion". The information is generated at "source" and utilized at "sink". This information is shareable, transmissible and communicable from one person to another or from one form to another or from one place to another as well as from one country to another or from one continent to another. The information can either be tacit or explicit. The information can be needed by anyone, at anytime, anywhere for decision- making. The examples of information are the information required by someone to reach a particular destination or the strategy, planning of the chemicals that can be used to make vaccine in order to combat the corona virus.

2. Information Retrieval via Smartphone: Present Situation

Now-a- days libraries are offering their services via smartphones in order to satisfy the growing demands of their users. Smartphones serves as a tool and thus makes it possible to connect the users to the e- libraries. In situation when schools, colleges and universities are closed information can be shared through smartphones , meetings can be conducted on various apps such as zoom, Google team and so, also there are number of apps which can be downloaded on the smartphones that enables the user to share the information. Students are opting for the online classes, e-dictionaries, e- encyclopedias, and so on. Even information can now be acquired through the audio- books now available on the different platforms via smartphones.

These tools also assist the user in communicating to the libraries. When one himself cannot visit to the libraries the user can access the library through their smartphones which not only saves his/her precious time but also his / her efforts. It provides the access to the mobile databases, mobile OPACs offered by various libraries and so on.

3. Review of Related Literature

Lohia&Madhusudan (2021) investigated the use of smartphones for enhancing Digital Information Literacy Skills among the LIS students of University of Delhi. In comparison to the females(42), majority of the respondents were males (48). The paper reveals that maximum percentage of respondents (87.8%)used websites whereas only 52.2%) uses e-database to obtain required information. Maximum percentage of respondents favored Google Scholar i.e. 82.2% in comparison to the other databases.

Tellaet al. (2021) carried a study on the way of using smartphones for accessing library materials and services in selected academic libraries among undergraduates. The study was conducted in five different Universities in South West Nigeria. The results showed that maximum percentage of undergraduates uses Android phones i.e. 61.3%. The results further revealed that among all the services offered, reference service is mostly used by the students. Majority of the undergraduates i.e. 52.5% agreed to the statement that access to library materials and services via. Smartphones is quicker and also time saving.

Kwasitu& Chiu (2019) studied the mobile information behavior among the students of Warner Pacific University. The primary data was collected by using the questionnaire methods and a structured

questionnaire was prepared and distributed among the respondents. After the collection of primary data, three things were investigated in the study i.e. technology diffusion, the way use of the online library resources and lastly the influence on mobile behavior of both traditional and non-traditional students. Out of the total 268 respondents, in view of population demographics, the maximum was white respondent with 40.7% followed by Hispanics with 24.6%, African American with 13% and only 0.3% were included in another category. The pedagogical usage model reveals that 19.2% respondent reads e-mail followed by accessing Moodle application (16.6%), reading articles (15.3), music listening (14.4%) and note-taking at last place (10.1%). Internet topped with 24.4% in context of most preferred information source whereas librarian was at least level with only 3.1%.

Elahi et al. (2018) conducted a study on the perception of the users regarding the use of mobile phones in retrieving information. Thirty – five structured questionnaires were distributed, out of which twenty- five were received. The questionnaire was divided into three sections. Section A included questions related to demography. The study revealed that out of the total 25 respondents 18 were males and only 7 were females. Section B included questions regarding the experience of using mobile phones. The 7-point Likert scale was used. The study revealed 80 % of the respondent have smartphone and only 5% have traditional phone. The maximum number of 18 respondents are using mobile phones for more than 10 years while only 4 respondents are using mobile phones between 7-9 years. Section C included questions regarding the type of services respondents want to have from libraries via the use of mobile phones, level of agreement regarding the advantages of introducing mobile phones for retrieving information from libraries based upon 7-point Likert scale.

Bergman &Yanai (2017) conducted a comparative study between smartphone retrieval and computer retrieval. The retrieval of 57 participants were considered under 4 different conditions. Condition 1st and 2nd involves files using PC's and emails using PC's respectively and further condition 3rd and 4th involves files using smartphones and emails using smartphones respectively. The 57 participants conducted 3 retrievals in each of 4 conditions mentioned above which contributed to total of 684 retrievals. The study further reveals the most favored retrieval method used in the abovementioned 4 experimental conditions was the navigation for files and inbox scrolling for emails.

Lee& Song (2015) conducted a comparative study to determine the mobile information seeking behavior among the students of Illinois University and Kyungsung University. The primary data was collected by distributing questionnaire among the undergraduate students enrolled in the business program. The questionnaire was divided into three parts i.e. firstly the mobile device ownership, secondly activities using mobile devices and lastly the library mobile services. The study further reveals that out of total number of 115 respondents 45 were male and 70 were female in Kyungsung University. Majority of respondents owns smartphones in both UIUC (i.e. 108) and KU (i.e. 125) whereas only 69 respondents owns tablet PCs in UIUC and 15 respondents in KU and the total percentage of the students who owns both i.e. smartphone and tablet PCs was 66% at UIUC and 12% at KU. Out of total number of 108 students at UIUC 56.5 % currently owns iPhone followed by android owners with 38.9% whereas majority of students at KU was android owners with 91.2%, followed by iPhone owners with only 8.8 %.

Aharony (2014) conducted a study on the mobile libraries taking into view the librarians and the LIS students perspectives. The study was conducted in Israel and involved librarians along with the LIS students. The primary data was collected by

distributing 2 questionnaire among the participants. The first questionnaire fetch the personal information of the respondents whereas the 2nd questionnaire gather data on the mobile technology. In context of demographic information, the study reveals that 17 % were male librarians and 18.41% were males LIS students whereas 83% were females librarians and 81.56% were female LIS students. Two core variables i.e. TAM and personal innovativeness were considered in the study. Lesser number of the Israeli participants in the study as well as only the Israeli participants were some of the limitations of the study.

Chen et al. (2013) conducted a study under the title "**Use of mobile apps in information seeking: An international viewpoint"**. In order to find out how smartphone help in transformation of mobile information seeking and establish the human-computer relationship, a pilot study was conducted on 7 participants. Two diary apps namely My Diet Diary and Evernote was employed in the study. The result revealed that both the apps were equally favored by the user. Next, social media usage behavior among the participants was studied to find out the reason for the selection, use and rejection of the social app. A total of 202 undergraduates took part in the online discussion and agreed that "EdveNTUre" was helpful to them in completing their assignments. The paper also reveals the perception of graduates on online discussion for learning.

Lippincott (2010) conducted a study to indicate the mobile future for academic libraries. The study gives a detail sketch of the e-books available and served to the users on their smartphones. Some academic libraries are already providing e-books to their e-book readers. The study also focuses on an application for smartphone users developed by Eucalyptus. It has several features like it provides its users with the facility of page turning function in order to give them the feeling of self-belongingness of physical book. Then it also provides the books to the users from the Project Gutenberg. These books are totally free from the copyright.

4. Methodology

The primary data for the proposed study was collected by distributing Google forms online to the respondents which highlighted the various aspects involved while retrieving the information via mobile phone. The online questionnaire consisted of both close-ended and open-ended questions. Also the data of this study was collected from secondary sources of information. The primary and secondary data was collected from books, reports, journals, theses, online e-resources etc.

5. Scope of the Study

The scope of the present study is confined to the students of University of Jammu, UT of Jammu & Kashmir.

6. Objectives of the Study

The following objectives have been set forth for the present study-

1. To determine the way users are retrieving information via their mobile phones.
2. To find out the frequency of usage of Smartphones for retrieving information.
3. To identify the purpose of using smartphones.
4. To find out various problems faced by the users while accessing information.
5. To explore the perception of users on advantages of using mobile phones in retrieving information.

7. Sample Population

The proposed study is conducted on the use of smart phones by the user belonging to the University of Jammu, UT of Jammu & Kashmir. The required data was collected from the respondents and used for further analysis.

8. Data Analysis

The collected data were organized and tabulated using the tables and percentages. The purpose of analysis is to reduce data to interpret-able form so that the relation of research problems can be studied and tested. The collected data is thoroughly analyzed and presented into following tables:

8.1 Respondents distribution

Table 1. Distribution of respondent's gender wise

S.No	Gender	No. of Respondents (n=145)	Percentage (%)
1.	Male	39	26.9%
2.	Female	106	73.1%
Total		145	100.0

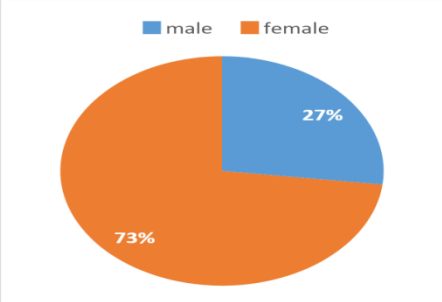

Figure 1. Distribution of respondent's gender wise

Table1 and Figure1 shows the distribution of respondent's gender wise. The above table reveals that the total number of respondents are 145, out of which 39 (26.9%) are males and 106 (73.1%) are females. Thus, the maximum percentage of females reveals that majority of females actively participated as comparison to the males.

8.2 Type of Smartphone respondent currently owns and use

Table 2. Type of Smartphone respondent currently owns and use

S.No	Type of smartphone	No. of respondents (n=145)	Percentage (%)
1.	Android	136	93.79%
2.	iPhone	8	5.5%
3.	Windows	1	0.68%
4.	Any other	0	0%
Total		145	

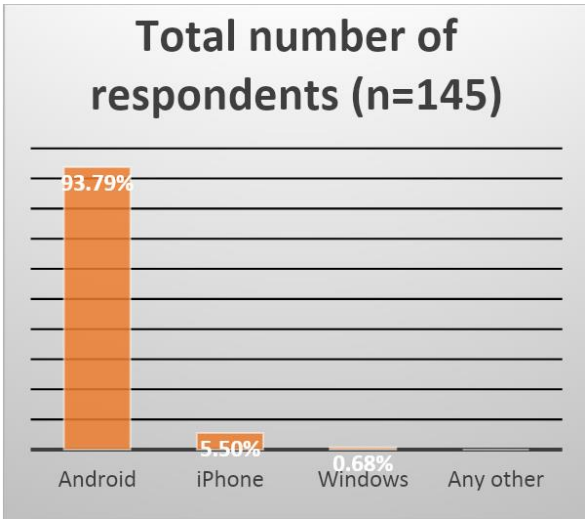

Figure 2. Type of Smartphone respondent currently owns and use

Table 2 and Figure 2 indicates the type of smartphone respondents currently owns and use. Out of the total number of respondents (145), android users are 136 (93.7%), iPhone users are 8 (5.5%) and window user are 1 (0.6%). Thus, it is observed that majority of the respondents are android users followed by iPhone and window.

8.3 Number of hours spent while using smartphone

Table 3 Time spent using a smartphone in a day

S.No	Number of hours	Number of respondents (n=145)	Percentage (%)
1.	Less than 1 hr.	05	3.4%
2.	2-4 hr.	76	52.4%
3.	5-7 hr.	55	37%
4.	8-10 hr.	06	4.1%
5.	More than 10 hr.	3	2.1%
Total		145	

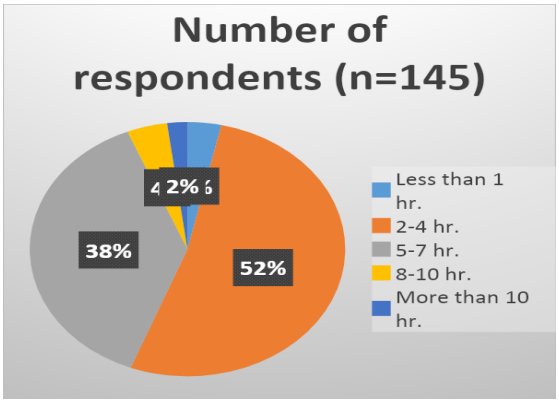

Figure 3.Time spent using a smartphone in a day

Table 3 and Figure 3 indicates the time spent by respondents on their smartphone in a single day. The number of respondents who are using their smartphone less than one hour are 05 (3.4%) whereas number of respondents using their smartphone for 5-7 hr. and 8-10 hr. are 55 (37%) and 06 (4.1%). The majority of number of respondents are using their smartphone for 2-4 hr. are 76 (52.4%) and number of respondents using it more than 10 hr. are 03 (2.1%).

8.4 Number of smartphones with internet access

Table 4 Number of smartphones with internet access

S.No	With or without Internet accessibility	Number of respondents (n=145)	Percentage (%)
1.	With internet access	140	96.5%
2.	Without internet access	05	3.5%
Total		145	

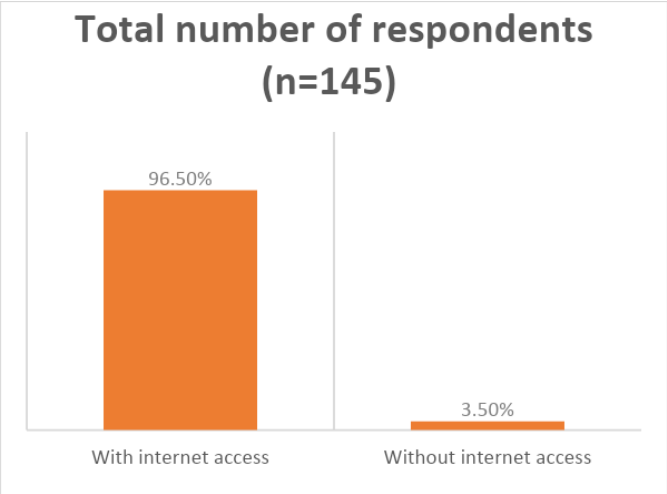

Figure 4. Number of smartphones with internet access

Table 4and Figure 4 indicates that majority of number of respondents (140 or 96.5%) are having internet access to their smartphones whereas only 05 (3.5%) of the respondents are without internet access.

8.5 Source of internet

Table 5 Source of internet access

S.No	Source of internet access	Number of respondents (n=145)	Percentage (%)
1.	University Wi-Fi	08	5.5%
2.	University LAN	00	0%
3.	Mobile Data	137	94.4%
Total		145	

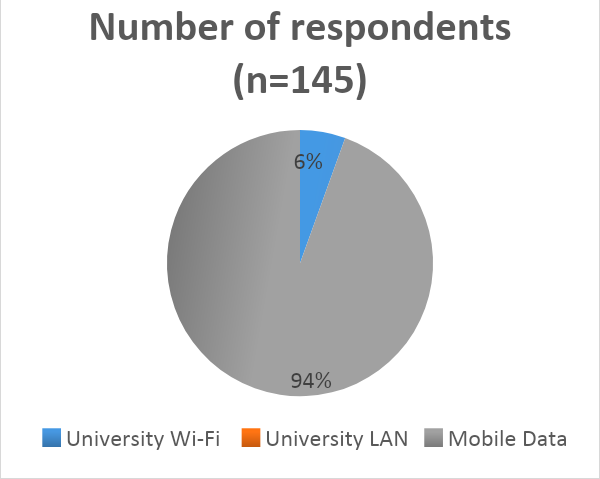

Figure5.Source of internet access

Table5 and Figure5shows the source of internet access to the respondent's device. None of the respondent used university LAN as a source of internet access whereas majority of number of respondents use their own mobile data as a source of internet access to their smartphone. Only 08 (5.5%) of the respondents use university Wi-Fi.

8.6 Purpose of using smartphone

Table6 Purpose of using smartphone

S.No	Purpose of using smartphone	Number of respondents (n=145)	Percentage (%)
1.	Retrieving information/knowledge	43	29.6 %
2.	Online classes	35	24.1%
3.	Reading e-books	14	9.6%
4.	Reading e-journals	12	8.2%
5.	Reading e- newspapers	20	13.7%
7.	Reading e-mails	12	8.2%
8.	e- library	06	4.1%
9.	Database searches	03	2.0%
Total		145	100

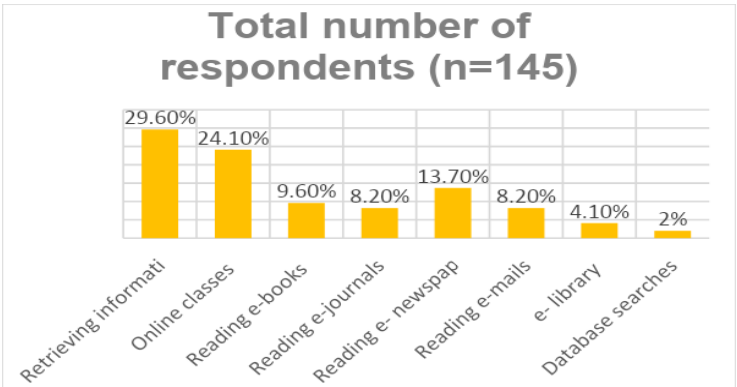

Figure6. Purpose of using smartphone

Table 6 and Figure 6 indicates the purpose of using internet on their smartphones. Retrieving information/ knowledge was ranked at the first place by the respondents (29.6%), followed by online classes (24.1%) in the second place, reading e-newspapers (13.7%) in the third place, reading e-books (9.6%) in the fourth place.

8.7 Problems faced while using internet

Table 7 Problems faced while using internet

S.No	Problems faced while using internet	Number of respondents(n=145)	Percentage (%)
1.	Smartphone illiteracy	03	2.1%
2.	Unavailability of internet facility	39	26.8%
3.	Slow internet access speed	53	36.5%
4.	Unavailability of Wi-fi facility	22	15.1%
5.	Frequent loss of signal	18	12.4%
6.	High cost of browsing	10	6.8%
Total		145	

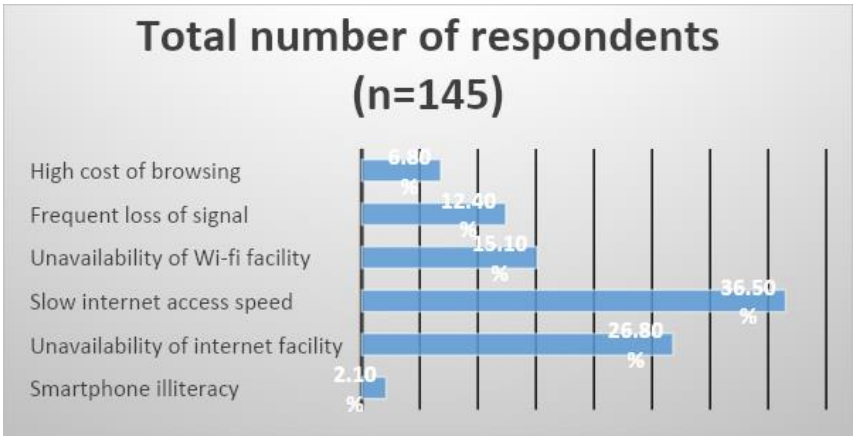

Figure 7. Problems faced while using internet

Table 7 and Figure 7 indicates the major problems faced by users while using internet on their smartphones. It was observed that slow internet speed was a major problem faced by the users with a count of 53 responses contributing to total of 36.5%. Another major problem was unavailability of internet facility with a count of 39 of responses contributing to the 26.8%.

8.8 Sources of information

Table 8 Sources of information used on smartphone

S.No	Source of information	Number of respondents (n=145)	Percentage
1.	E- books	38	26.2 %
2.	E- magazines	08	5.5%
3.	E-newspapers	22	15.1%
4.	E-journals	10	6.8%

5.	E-encyclopedias	16	11.0%
6.	E- dictionaries	51	35.1%
Total		145	

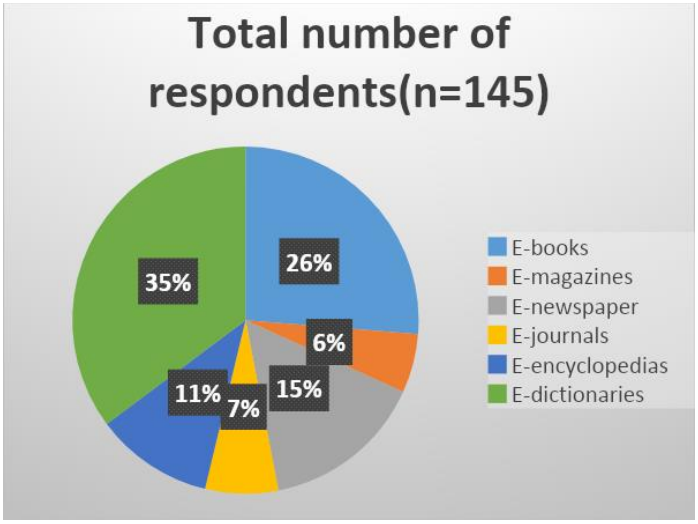

Figure8. Sources of information used on smartphone

Table 8 and figure 8indicates the sources of information used on smartphones. E- Dictionaries (35.1%) are most preferred information source used on smartphone followed by e-books (26.2%), e- newspapers (15.1%), e-encyclopedias (11.0%)and e-journals (6.8%).

8.9 Smartphone vs. traditional documents

Table 9. Comparison of use of smartphone with traditional documents

S.No	Statements	yes	No	Total
1.	More expensive	82	63	145
2.	More informative	121	24	145
3.	Easy to use	131	14	145
4.	Time saving	123	22	145

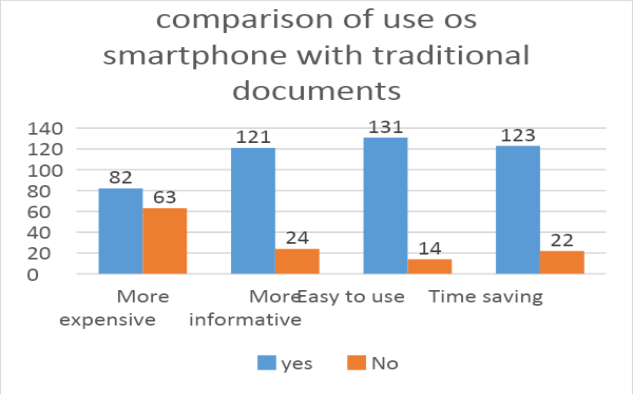

Figure9. Comparison of use of smartphone with traditional documents

Table 9 and figure 9 indicates comparison of use of smartphone with traditional documents. Majority of responses are in favor of that smartphone is easy to use, time saving and also more informative than traditional documents.

8.10 ***Does Smartphone has enhanced knowledge***

Table 10 Enhancement of knowledge via Smartphone

S.No	Enhanced knowledge	Percentage	Not enhanced knowledge	Percentage
1.	144	99.3 %	01	0.7 %
Total	Number of respondents = 145			100.0

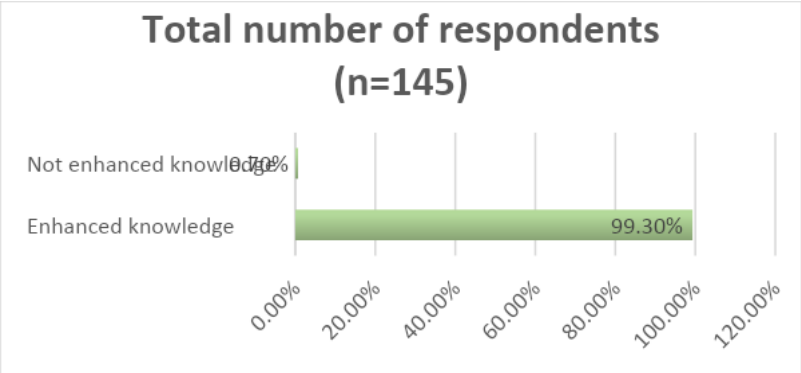

Figure10.Enhancement of knowledge via Smartphone

Table 10 and Figure 10 indicates that majority of respondents i.e 99.3% of respondents are in favour of their knowledge enhancement via smartphone whereas rest 0.7% denied.

*8.11****Whether smartphone can replace library services or not***

Table11Smartphone can replace library services or not

S.No	Can be replaced	Percentage	Can not be replaced	Percentage
1.	39	26.9%	106	73.1 %
Total number of respondents				n=145

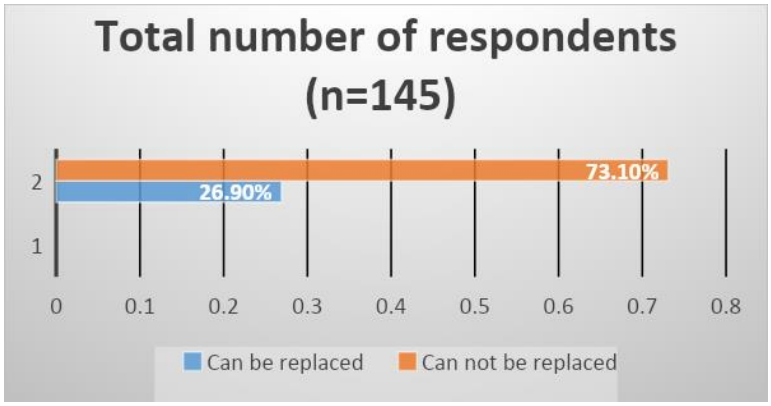

Figure 11.Smartphone can replace library services or not

Table 11 and Figure 11 indicates that majority of respondent (73.1%) are in favor that smartphones cannot replace library services whereas only 26.9% of the respondents says that smartphones can replace library services.

9. Findings

- Findings reveal that maximum numbers of respondents are females 106 (73.10%) whereas remaining were males 39 (26.89%).
- Majority of number of respondents have android smartphones 136 (93.79%) whereas only 1 (0.68%) of respondents have windows smartphones.
- Maximum number of 76 (52.4%) respondents spent about 2-4 hrs. on their smartphones in a day while retrieving information whereas about 03 (2.1%) respondents spent more than 10 hrs.
- Majority of respondents 140 (96.5%) have internet access to their smartphones whereas only 05 (3.4%) respondents are without internet access.
- The major source of internet access on their smartphone is mobile data 137 (94.4%) whereas none of the respondent uses university LAN.
- The major purpose of using smartphone is for retrieving information/knowledge 43 (29.6%) whereas about 03 (2.0%) seek database search as a purpose of using smartphone
- In regard to the problems faced while using internet majority of respondent claim that slow internet speed is the major disadvantage 53 (36.5%) whereas only 03 (2.1%) respondent claim smartphone illiteracy to be a problem.
- The major source of information on smartphone is e-dictionaries i.e. 51 (35.1%) and least source of information chosen by respondent is e-journals i.e. 10 (6.89%).
- The findings also reveals the comparison of use of smartphone with traditional documents in terms of more informative 121 (yes) and 24 (No); easy to use 131(Yes) and 14 (No); time saving 123(Yes) and 22 (No) and more expensive 82(Yes) and 63(No)
- Maximum of respondent 144 (99.3%) agreed upon the statement that smartphone have enhanced their knowledge whereas only o1 (0.7%) disagreed with the statement.
- Majority of respondents 106 (73.1%) agreed upon the statement that smartphone cannot replace library services and 39 (26.9) disagreed with the statement.

10. Conclusion

The proposed study is sought to examine the user's perception towards Use of Smartphone's in Retrieving Information with Special Reference to University of Jammu. The objectives of the study are met satisfactorily. Although the use of smartphone have enhanced our knowledge but yet they cannot replace the library services. Also the purpose of using smartphones vary from student to student. Besides of the problems faced by an individual while using the smartphones, the use of smartphones also added up in acquiring the information. Today, the use of smartphones is one of the way by which libraries are coming within our hands and flow of information is taking place. Majority of the students agreed with the statement that use of smartphones have enhanced their knowledge but yet they cannot replace the library and the librarians.

References

- **Aharony, N.** (2014). Mobile libraries: Librarian's and student's perspectives. *College and Research Libraries*, 75(2), 202-217. Retrieved from https://doi.org/10.5860/crl12-415

- **Bergman, O., &Yanai, N.** (2017). Personal information retrieval: Smartphones vs. computers, emails vs. files. *Personal and ubiquitous computing*, 22, 621-632. Retrieved from https://doi.org/10.1007/s00771-017-1101-6
- **Chen, H.L., Fulton, C., Gleave, H., Theng, Y.L., & Wu, M.M.** (2013). Use of mobile apps in information seeking: An international viewpoint. *Proceedings of the American Society for information Science and technology*, 50(1). Retrieved from https://doi.org/10.1002/meet.145055001004
- **Cherubini, M. et al** (2011). Barriers and Bridges in the Adoption of Today's Mobile Phone Contextual Services. *Proceedings of the 13th International Conference on Human Computer Interaction with Mobile Devices and Services*, 167–176.
- **Crestani, F. et al.** (2019). Mobile Information Retrieval. *Springer Cham*. Retrieved from https://arxiv.org/pdf/1902.01790.pdf
- **Elahi, H., Islam, S., & Begum, D.** (2018). Perception on the use of mobile phones in retrieving information from academic. *International Journal of knowledge content development and technology*, 8(1), 37-50. Retrieved from https://dx.doi.org/10.5865/1JKCT.2018.8.1.037
- **Kwasitsu, L. & Chiu, A.N.** (2019). Mobile information behavior of warner pacific university students. *Journal of Library and Information Science Research*, 41(2), 129-150. Retrieved from https://doi.org/10.1016/j.lisr.2019.04.002
- **Lee, J.-M., & Song, Y.S.** (2015). Mobile information-seeking behavior: A comparative study. *IFLA Journal*, 41(2), 153-161.Retrieved from https://doi.org/10.1177/0340035215583501
- **Lippincott, J. K.** (2010). A mobile future for academic libraries. *Reference services review*, 38(2), 205-213. Retrieved from https://doi.org/10.1108/00907321011044
- **Lohia, P., &Margam, M.** (2021). Use of Smartphones For Enhancing Digital Information Literacy Skills: A Study Of Library and Information Science Students, University of Delhi. *Library Philosophy and Practice* (e-journal).6424. Retrieved from https://digitalcommons.unl.edu/libphilprac/6424
- **Sharma, A**. (2019). Users Perception towards Use of Smartphone's in Retrieving Information with Special Reference to University of Jammu: A Study. Unpublished M.Lib.I.Sc dissertation. University of Jammu, Jammu.
- **Tella, A., Olawuyi, K.,& Durodolu, O.O.** (2021). Undergraduates use of Smartphone for accessing library materials and services in selected academic libraries in South West Nigeria. *Journal of Educators Online*, 18(2), 1-18.
- **West, M. & Chew, H.E.** (2014). Reading in the mobile era: A study of mobile reading n developing countries. *United Nations Educational, Scientific and Cultural Organization.* Retrieved from https://unesdoc.unesco.org/ark:/48223/pf0000233828

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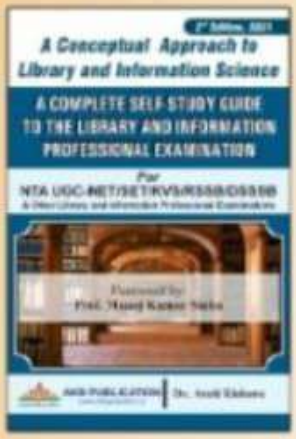

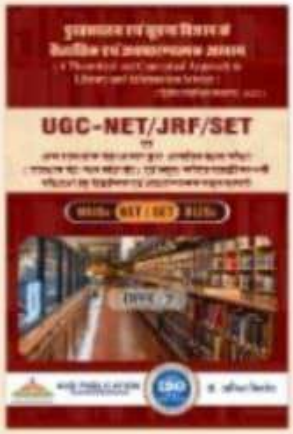

AKB Publication
Bhagalpur (Bihar)
Email: akbpublication2019@gmail.com
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Branch Office :-
Jaipur(Rajasthan)
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