# INDIAN JOURNAL OF LIBRARY AND INFORMATION SCIENCE

(A PEER-REVIEWED AND REFEREED JOURNAL)

VOLUME 18 NUMBER 1 JANUARY - APRIL 2024



RED FLOWER PUBLICATIONS PVT LTD New Delhi - 110091

Revised Rates for 2024 (Institutional)	Frequency	India(INR)	India(INR)	Outside India(USD)	Outside India(USD)
Title of the Journal		Print Only	Online Only	Print Only	Online Only
Community and Public Health Nursing	Triannual	6500	6000	507.81	468.75
Indian Journal of Agriculture Business	Semiannual	6500	6000	507.81	468.75
Indian Journal of Anatomy	Quarterly	9500	9000	742.19	703.13
Indian Journal of Ancient Medicine and Yoga	Quarterly	9000	8500	703.13	664.06
Indian Journal of Anesthesia and Analgesia	Bi-monthly	8500	8000	664.06	625
Indian Journal of Biology	Semiannual	6500	6000	507.81	468.75
Indian Journal of Communicable Diseases	Semiannual	9500	9500	761.25	742.19
Indian Journal of Dental Education	Quarterly	6500	6000	507.81	468 75
Indian Journal of Diabetes and Endocrinology	Semiannual	9000	8500	703.13	400.75 664.06
Indian Journal of Emergency Medicine	Quarterly	13500	13000	1054.69	1015.63
Indian Journal of Energicky Medicine and Pathology	Quarterly	17000	16500	1328.13	1289.06
Indian Journal of Forensic Odontology	Semiannual	6500	6000	507.81	468.75
Indian Journal of Genetics and Molecular Research	Semiannual	8000	7500	625	585.94
Indian Journal of Law and Human Behavior	Semiannual	7000	6500	546.88	507.81
Indian Journal of Legal Medicine	Semiannual	9500	9000	742.19	703.13
Indian Journal of Library and Information Science	Triannual	10500	10000	820.31	781.25
Indian Journal of Maternal-Fetal & Neonatal Medicine	Semiannual	10500	10000	820.31	781.25
Indian Journal of Medical and Health Sciences	Semiannual	8000	7500	625	585.94
Indian Journal of Obstetrics and Gynecology	Quarterly	10500	10000	820.31	781.25
Indian Journal of Pathology: Research and Practice	Triannual	13000	12500	1015.63	976.56
Indian Journal of Plant and Soil	Semiannual	7500	7000	585.94	546.88
Indian Journal of Preventive Medicine	Semiannual	8000	7500	625	585.94
Indian Journal of Research in Anthropology	Semiannual	13500	13000	1054.69	1015.63
Indian Journal of Surgical Nursing	Triannual	6500	6000	507.81	468.75
Indian Journal of Trauma and Emergency Pediatrics	Quarterly	10500	10000	820.31	781.25
Indian Journal of Waste Management	Semiannual	10500	10000	820.31	781.25
International Journal of Food, Nutrition & Dietetics	Triannual	6500	6000	507.81	468.75
International Journal of Forensic Science	Semiannual	11000	10500	859.38	820.31
International Journal of Neurology and Neurosurgery	Quarterly	11500	11000	898.44	859.68
International Journal of Pediatric Nursing	Triannual	6500	6000	507.81	468.75
International Journal of Political Science	Semiannual	7000	6500	546.88	507.81
International Journal of Practical Nursing	I riannual	6500	6000	507.81	468.75
International Physiology	Orientoria	8500	8000	604.06	620 ERE 04
Journal of Animal Ecod Science and Technology	Quarterly	8000	7500	620 703 13	585.94 664.06
Journal of Cardiovaccular Modicine and Surgery	Quartorly	11000	10500	850.28	820.21
Journal of Emergency and Trauma Nursing	Semiannual	6500	6000	507.81	468 75
Journal of Food Additives and Contaminants	Semiannual	6500	6000	507.81	468 75
Journal of Food Technology and Engineering	Semiannual	6000	5500	468 75	429.69
Journal of Forensic Chemistry and Toxicology	Semiannual	10500	10000	820.31	781.25
Journal of Global Medical Education and Research	Semiannual	7000	6500	546.88	507.81
Journal of Global Public Health	Semiannual	13000	12500	1015.63	976.56
Journal of Microbiology and Related Research	Semiannual	9500	9000	742.19	703.13
Journal of Nurse Midwifery and Maternal Health	Triannual	6500	6000	507.81	468.75
Journal of Orthopedic Education	Triannual	6500	6000	507.81	468.75
Journal of Pharmaceutical and Medicinal Chemistry	Semiannual	17500	17000	1367.19	1328.13
Journal of Plastic Surgery and Transplantation	Semiannual	27500	27000	2148.44	2109.38
Journal of Psychiatric Nursing	Triannual	6500	6000	507.81	468.75
Journal of Radiology	Semiannual	9000	8500	703.13	664.06
Journal of Social Welfare and Management	Quarterly	8500	8000	664.06	625
New Indian Journal of Surgery	Quarterly	9000	8500	703.13	664.06
Ophthalmology and Allied Sciences	Triannual	7000	6500	546.88	507.81
Pediatrics Education and Research	Quarterly	8500	8000	664.06	625
Physiotherapy and Occupational Therapy Journal	Quarterly	10000	9500	781.25	742.19
RFP Gastroenterology International	Semiannual	7000	6500	546.88	507.81
RFP Indian Journal of Hospital Infection	Semiannual	13500	13000	1054.69	1015.63
RFP Indian Journal of Medical Psychiatry	Semiannual	9000	8500	703.13	664.06
RFP Journal of Biochemistry and Biophysics	Semiannual	8000	7500	625	585.94
RFP Journal of Dermatology	Semiannual	6500	6000	507.81	468.75
RFP Journal of ENT and Allied Sciences	Semiannual	6500	6000	507.81	468.75
RFP Journal of Gerontology and Geriatric Nursing	Semiannual	6500	6000	507.81	468.75
KFP Journal of Hospital Administration	Semiannual	8000	7500	625	585.94
orology, reputology and Andrology International	Jennannual	0500	0000	00±.00	020

Terms of Supply:

Agency discount 12.5%. Issues will be sent directly to the end user, otherwise foreign rates will be charged. All back volumes of all journals are available at current rates. All journals are available free online with print order within the subscription period.

1. 2. 3. 4. 5. 6. 7. 8. 9.

All legal disputes subject to Delhi jurisdiction. Cancellations are not accepted orders once processed. Demand draft/cheque should be issued in favour of "**Red Flower Publication Pvt. Ltd**." payable at **Delhi**. Full pre-payment is required. It can be done through online (http://rfptl.co.in/subscribe.php?mid=7).

No claims will be entertained if not reported within 6 months of the publishing date.
 Orders and payments are to be sent to our office address as given below.
 Postage & Handling is included in the subscription rates.
 Subscription period is accepted on calendar year basis (i.e. Jan to Dec). However orders may be placed any time throughout the year.

#### Order from

Red Flower Publication Pvt. Ltd., 48/41-42, DSIDC, Pocket-II, Mayur Vihar Phase-I, Delhi - 110 091 (India) Mobile: 8130750089, Phone: 91-11-79695648 E-mail: sales@rfppl.co.in, Website: www.rfppl.co.in

# Indian Journal of Library and Information Science

**Editor-in-Chief** 

A. Lal

### **Executive Editors**

Sanjay K Kaushik, Kurukshetra University, Kurukshetra SS Joshi, Guru Jambheshwar University, Hissar
 S Sudarshan Rao, Osmania University, Hyderabad
 Mehtab Alam Ansari, Aligarh Muslim University, Aligarh

### **International Editorial Advisory Board**

Dong-Geun Oh, South Korea Farnaz Fassihi, Iran M Natarajan, Ethiopia Md. Shariful Islam, Bangladesh Ramadan Elaiess, Libya Tella Adeyinka, Nigeria Nazmul Islam, Bangladesh Ode Elijah, Nigeria

### National Editorial Advisory Board

Kavita Biradar, Bengluru	Chandran Velmurugan, Tamilnadu
Sarita Mishra, Bilaspur	Kaushal Chauhan, Haryana
Shiv Charan, Panipat	Mahendra Kumar, Madhya Pradesh
Sivakalari S, Tamilnadu	Jamal A. Siddiqui, Meerut
Kunwar Singh, Varanasi	K. Praveena, Tamilnadu
K S M Sawinathan, Coimabatore	S. Thanuskodi, Tamilnadu
Pravin M. Dongare, Maharashtra	Shiva Kanaujia Sukula, New Delhi
Babuprasad k.c, Karnataka	V.R. Rajan, Pondicherry
Debdas Mondal, West Bengal	Vinod Kumar, Hisar
Bibhuti Pattanaik, New Delhi	Shipra Awasthi, New Delhi
C. Bhaskaran, Tamilnadu	Ravi Kumar Chegoni, Hyderabad
Abhijit Chatterjee, Kolkata	Satish Padme, Maharashtra
Sangeeta Singh, Chattisgarh	Lakshminarasimhappa M.C., Bangalore
Giriraj, New Delhi	B. V. Chalukya, Maharashtra
Anil Kumar Dhiman, Uttaranchal	Shivakumar T.C., Karnataka

Publication Editor: Dinesh Kumar Kashyap

**Indexing information:** The journal is indexed with Indian Citation Index (ICI), India; Google Scholar; Index Copernicus, Poland; National Science Library, New Delhi; Genamics JournalSeek; Science Library Index; The International Committee of Medical Journal Editors (ICMJE).

© 2024 Red Flower Publication Pvt. Ltd. All rights reserved.

The views and opinions expressed are of the authors and not of the **Indian Journal of Library and Information Science**. The Indian Journal of Library and Information Science does not guarantee directly or indirectly the quality or efficacy of any product or service featured in the the advertisement in the journal, which are purely commercial.

**Corresponding address: Red Flower Publication Pvt. Ltd**, 48/41-42, DSIDC, Pocket-II, Mayur Vihar Phase-I, Delhi - 110091 (India), Phone: 91-11-79695648, E-mail: info@rfppl.co.in, Web: www.rfppl.co.in

Printed at: Soujanya Printing Press, B-303, Okhla Industrial Area Phase-I, New Delhi - 110020.

The Indian Journal of Library and Information Science (Print ISSN 0973-9548, Online ISSN 0973-9556, Registered with Registrar of Newspapers for India: DELENG/2007/22242) provides comprehensive international coverage of library & information science and technology. IJLIS is published 3 times a year by the **Red Flower Publication Pvt. Ltd.** 

It presents peer-reviewed survey and original research articles on specific areas are: new information technology, education and training, human resource management, the changing role of the library, future developments, opportunities, bibliographic databases, cataloging issues, electronic publishing, acquisitions, collection development, administration, management, archives, preservation, and special collections, automation and cataloging. Its papers include letters to the editor, book reviews, calendar of events, conference reports, interviews, and much more.

**Readership:** Scholars, professionals, practitioners, faculty, students in the field of library and information science.

**Indexing information:** The journal is indexed with Indian Citation Index (ICI), India; Google Scholar; Index Copernicus, Poland; National Science Library, New Delhi; Genamics JournalSeek; Science Library Index; The International Committee of Medical Journal Editors (ICMJE).

### **Subscription Information**

India Institutional (1 year) (Print+Online): INR 10500

*Rest of the World* Insitutional (1 year) (Print+Online): USD 820.31

**Payment instructions** *Online payment link:* http://rfppl.co.in/payment.php?mid=15

*Cheque/DD:* Please send the US dollar check from outside India and INR check from India made. Payable to 'Red Flower Publication Private Limited'. Drawn on Delhi branch

Wire transfer/NEFT/RTGS: Complete Bank Account No. 604320110000467 Beneficiary Name: Red Flower Publication Pvt. Ltd. Bank & Branch Name: Bank of India; Mayur Vihar MICR Code: 110013045 Branch Code: 6043 IFSC Code: BKID0006043 (used for RTGS and NEFT transactions) Swift Code: BKIDINBBDOS

Send all Orders to: Subscription and Marketing Manager, Red Flower Publication Pvt. Ltd., 48/41-42, DSIDC, Pocket-II, Mayur Vihar Phase-I, Delhi - 110 091(India), Phone: 91-11-79695648, E-mail: sales@rfppl.co.in, Website: www.rfppl.co.in

# Indian Journal of Library and Information Science

January - April 2024 Volume 18 Number 1 DOI: http://dx.doi.org/10.21088/ijlis.0973.9548

Driginal Articles	
Comparing Library Science Education in India and Australia Issues Challenges and Growth Strategies for India	0
Mehtab Alam Ansari, Shamim Aktar Munshi	
Scientometric Portrait of Port M. Santappa	2
B. Shanti, K. Thangarasu, S. Thanuskodi	
Shaping the Smart Search Possible: An Inside Story of ETD Metadata	2
Shiva Kanaujia Shukla, Shipra Awasthi	
Information Literacy Skills among PG Students and Researchers in Accessing the Resources	3
Nayana J, Padmavathi NW	
Comprehending the Print Books and E-Books Preferences: Comparing the Contrasts	4
Mamta Rani, Rishabh Kumar Jain, Shiva Kanaujia Sukula	
Measuring and Analyzing Scholarly Literature Published on Diabetes Mellitus Type 1 with Special Reference to Bradford Law of Scattering and Leimkuhlermodel: A Scientometrics Study	5
Richa Arya, Babita Jaiswal, Garima Bisaria	
What Environmentalists want to Cite: A Bibliometric Study based on Environmental Conservation Journal	65
Anii Kumar Dhiman, Sachin Kumar Kaushik	
view Articles	
Marketing Strategy for Information Products and Services in Library: In view of the Ranganathan's Five Laws of Library and Information Science	75
Mahendra Kumar	
Impact of Library Resources on Prison Education in India: A Review of Re-habilitation Efforts	8
Sana Iliyas, Mehtab Alam Ansari	
Newspaper Reading Habit of College Students: A Study of Guru Nanak College Budhlada	82
Inderjeet Singh Maan, Surinder Singh Ghuman	
Guidelines for Authors	97



"	INR 845/USD66	INR347/USD45	INR659/USD51	INR299/USD23	INR1195/USD75	INR 498/USD 38	INR 599/USD 46	INR 325/USD26	INR 325/USD26	108 999/USD 79		INR 1325/USD 104	INR 399/USD 49	INR 545/USD 42	INR 399/USD49	INR 599/USD 44		INR 1325/USD104	INR 399/USD 49	.et-II,	ni.o.
	<b>21. Recent Advances in Neonatology (2020)</b> Dr. T.M. Ananda Kesavan	22. Shipping Economics (2018) Dr. D. Amutha	23. Skeletal and Structural Organizations of Human Body (2019) $Dr, D.R, Singh$	24. Statistics In Genetic Data Analysis (2020) S. Venkatasubramanian	25. Synopsis of Anesthesia (2019) Dr 1 alit Gunta	26. A Handbook of Outline of Plastic Surgery Exit Examination (2022) <i>Prof Ravi Kumar Chittoria &amp; Dr. Saurabh Gunta</i>	27. An Introductory Approach to Human Physiology (2021) Satyajit Tripathy, Barsha Dasssarma, Motlalpula Gibert Matsabisa	28. Biochemical and Pharmacological Variations in Venomous Secretion of Toad (Bufo melanostictus)(2021) Dr. Thirupathi Koila & Dr. Venkaiah Yanamala	<ol> <li>Climate, Prey &amp; Predator Insect Poupulation in Bt Cotton and Non-Bt Cotton Agriculture Feilds of Warangal District (2022) Dr. Peesari Laxman, Ch. Sammaiah</li> </ol>	30. Community Health Nursing Record Book Volume – I & II (2022) Ritika Rocaue	31. Handbook of Forest Terminologies (Volume I & II) (2022) Dr $C$ N Hari Preseth Dr A Balssubrammian Dr M Simmulash	V. Marimaran, Dr. G., Stathiga 23 MCOc Biochamicter/00000	22. MCCS of Diodicinaty (2024) Sachin C. Narwadiya, Dr. Irfana Begum 23. Nawbarn Carain the State of Hann Dardeeh (2002)	33. New Joint Carle III (IIIE State OL Ottal I Lauesu (2022) Dr. Tridibesh Tripathy 34 Octomorocie: Wordt Rang Discoso (2002)	Dr. Dondeti Uday Kumar & Dr. R. B. Uppin 25. Ouick I'nd staes in Anaethacia (7002)	Dr. Rupinder Kaur Kaiche, Dr. Vidhyadhar Modak, Dr. Shilpa Sannakki & Dr. Vivek Gupta	36. Textbook of Practice of Medicine with Homoeopathic Therapeutics(2022)	Dr. Pramod Kumar 37 Trends in Anthronolocical Research(2022)	Dr. Jyoti Ratan Glosh, Dr. Rangya Gachui	Order from: Red Flower Publication Pvt. Ltd., 48/41-42, DSIDC, Pock Mavur Vihar Phase-I. Delhi - 110 091 (India). Mohile: 8130750089.	Phone: 91-11-79695648, E-mail: info@rfppl.co.in, Website: www.rfppl.c
				INR549/USD44	INR 395/USD31	INR250/ USD20	INR100/ USD50	INR263/USD21	INR599/USD47 INR460/USD34	INR329/USD26	INR449/USD35	INR595/USD46	INR300/ USD29	INR285/USD22	INR545/USD42	INR999/USD78	INR 250/USD50	INR525/ USD50	INR390/USD30	INR395/USD31	INR299/USD231
	<b>Red Flower Publication (P) Ltd.</b> <i>Presents its Book Publications for sale</i>	1. Beyond Medicine: A to E for Medical Professionals) (2020)	Kaltaas Chacaan INR 390/USD31	<ol> <li>Biostatistical Methods For Medical Research (2019) Sanjeev Sarmukaddam</li> </ol>	<b>3. Breast Cancer: Biology, Prevention And Treatment (2015)</b> Dr. A. Ramesh Rao	<b>4.</b> Chhotanagpur A Hinterland of Tribes (2020) Ambrish Gautam	5. Child Intelligence (2004) Dr. Rajesh Shukla, Md, Dch.	<ol> <li>Clinical Applied Physiology and Solutions (2020) Varun Malhotra</li> <li>Comprehensive Medical Pharmacology (2019)</li> </ol>	Dr. Alimad Najmi 8. Critical Care Nursing in Emergency Toxicology (2019) Vivekanshu Verma	9. Digital Payment (Blue Print For Shining India) (2020) Dr. Bishuu Prasad Patro	<b>10. Drugs in Anesthesia (2020)</b> <i>R. Varaprasad</i>	11. Drugs In Anesthesia and Critical Care (2020) Dr. Blatona Gupta	12. MCQs in Medical Physiology (2019) Dr. Bharati Mehta	13. MCQs in Microbiology, Biotechnology and Genetics (2020) Biswaiit Batabyal	14. MCQs In Minimal Access and Bariatric Surgery (2nd Edition) (2020) Anshuman Kaushal	<b>15. Patient Care Management (2019)</b> <i>A.K. Mohiuddin</i>	16. Pediatrics Companion (2001) Rajesh Shukla	17. Pharmaceutics-1 (A Comprehensive Hand Book) (2021) V. Sandhina	18. Poultry Eggs of India (2020) Prafulla K. Mohanty	<ol> <li>Praetical Emergency Trauma Toxicology Cases Workbook (2019) Dr. Vivekanshu Verma, Dr. Shiv Rattan Kochar, Dr. Devendra Richhariya</li> </ol>	20. Practical Record Book of Forensic Medicine & Toxicology (2019) Dr. Akhilesh K. Pathak

Indian Journal of Library and Information Science / Volume 18 Number 1 / January-April 2024

# **Comparing Library Science Education in India and Australia:** Issues, Challenges and Growth Strategies for India

Mehtab Alam Ansari<sup>1</sup>, Shamim Aktar Munshi<sup>2</sup>

#### How to cite this article:

Mehtab Alam Ansari, Shamim Aktar Munshi. Comparing Library Science Education in India and Australia: Issues, Challenges and Growth Strategies for India. Indian J Lib Inf Sci 2024; 18 (1):07–19.

#### Abstract

Library education in India and Australia has developed independently with distinct features. This paper provides brief profile of the history of India and Australia followed by discussion of the evolution of LIS education in both the countries. The paper is a comparative study. It discusses the different issues and challenges encountered in LIS education in India and Australia. This comparison is an attempt to critique improvements that must be made to LIS education in India to ensure on going sustainability and relevance. In India, the growth of library schools; dated LIS curricula; increasing student faculty ratios; accreditation; and the employability of graduates are some key issues. In Australia challenges include the broad employment landscape; mismatch between pay and qualifications; decreasing numbers of educators; existence of a multi-tiered system; LIS students and institutional affiliations. A number of strategies have been used in both India and Australia to enhance LIS education. Using LIS education in Australia as a benchmark the authors show how LIS education in India can be enhanced and improved.

Keywords: LIS Education; LIS Profession; Librarianship; India; Australia.

# INTRODUCTION

This article presents some of the issues and challenges concerning Library and Information

**Coressponding Author: Mehtab Alam Ansari**, Professor, Department of Library and Information Science, Aligarh Muslim University, Aligarh 202001, Uttar Pradesh, India.

E-mail: mehtabalamansari1@gmail.com

Received on: 18.01.2024 Accepted on: 20.02.2024

Science (LIS) education in two important countries of different continents namely, India and Australia. Before independence, Australian and India were both part of the British Empire and both are members of the Commonwealth of Nations. Also, both the countries have adopted British model of education. Also, both the countries have a history of more than one century of LIS education in their respective countries. In the beginning of the paper, very brief profile of Australia is given followed by the evolution of LIS education in the country. Then article discusses certain issues concerning LIS education in Australia. Subsequently, this study highlights issues and challenges faced by LIS education before suggesting various measures which India needs to adopt in order to improve

Authors Affiliation: <sup>1</sup>Professor, Department of Library and Information Science, Aligarh Muslim University, Aligarh 202001, Uttar Pradesh, India, <sup>2</sup>Librarian, Ananda Chandra College, Jalpaiguri 735101, West Bengal, India.

LIS education. Notably, LIS education in India and Australia has completed a century of its existence. During this period, India could not make significant progress while Australia has made remarkable progress in LIS sector. This progress could be mainly attributed to the research project Re-conceptualizing and Re-positioning Australian Library and Information Science Education for the 21st century. The main aim of the research project was to identify and examine the skill and the knowledge essentials for the successful library and information professionals in the 21st century. Significantly, the future of effective and relevant LIS education in India is a matter for all stakeholders in the profession. Purpose of this article is to compare LIS education in India with that of Australia and to suggest how the former can make progress

following the steps taken by the latter. This will bring standards of quality of LIS education as well as recognition of qualification for professionals in India.

# METHODOLOGY

This article is primarily based on the secondary sources. Articles appeared in Peer-reviewed journals were consulted. In addition to this, the corresponding author has had a formal conversation with the noted scholars working in the field of LIS education while writing the present article. It is worthy pointing out that very useful information has been provided by these scholars thus enabling a significant improvement in the work.

<b>Table 1:</b> Some Facts about LIS education in Australia and Inc	Table	1: Some	Facts	about L	IS education	n in Aus	tralia and	d Indi
---	-------	---------	-------	---------	--------------	----------	------------	--------

LIS Education	Australia	India
Year of origin	1897	1901
Accreditation	ALIA	No agency/body
Number of Library Schools/ Departments	26 ALIA accredited Institutes	181
LIS Curricula	Periodically Reviewed	Latest reviewed in 2001
Student- Faculty Ratio	Balanced	Imbalanced (Less Faculty members)
Employment Opportunities	Broad and Diverse	Narrow
LIS Students	Optimistic about future career	Choose as a last option
Number of LIS courses	41 ALIA accredited courses + VET certificate courses	8
LIS students enrolment	4080 ( in 2014)	5000 Approx (per year)
Trend Report regarding LIS education, skills and employment	Compiled annually by ALIA	No such report is available

*Note:* From Singh, S. P. (2003). Library and Information Science Education in India: Issues and Trends; Singh, K.P. & Chander, H. (2013). Professional Inclination of Library and Information Science (LIS) students of India: A Study of Socioeconomic Background and Career Choice Factors. *International Journal of Knowledge Content Development & Technology*, 3(2) Hallam, Gillian (2006). Trends in LIS education in Australia; Harvey, R. (2001). Losing the quality battle in Australian education for librarianship. *Australian Library Journal*, 50(1)

# Evolution of LIS Education in Australia

Australia is one of the wealthiest countries in the world with the 12th largest economy. In 2014, Australia had fifth highest per capita income in the world. The service sector is the largest part of the Australian economy, accounting for about 67.4%, while industry and agriculture accounts 28.9% and 3.7% respectively. Urban population constitutes 89.4% of the total population and education expenditure is 5.3% of GDP (Central Intelligence Agency, 2017).

In Australia, origin of LIS education can be traced back to 1897 when H.C.L. Anderson, the then librarian of Public Library of New South Wales started tuition classes for his library staff and also initiated a process to adopt the British model of library education (Hallam, 2007). Librarianship qualifications were first awarded by the library association of Australia in 1960 by schools based in universities or other tertiary level educational institutions. Bachelor's degrees in LIS education have been adopted in Australia from 1971 (Harvey & Higgins, 2003). At present, a qualified LIS professional can obtain professional membership of the Australian Library and Information Association (ALIA) with either a bachelor degree in LIS, a graduate diploma or masters (Rochester, 1997). LIS Education is offered at the university level with graduates becoming librarians, and at the vocational educational level through the institutes of Technical and Further education (TAFE) and graduates from these institutes become library technicians. Significantly, ALIA accredit LIS programs that meet its standards for course contents and quality (Chawner, 2015). Process of course recognition assures potential employers about the range as well as levels of skills and knowledge of graduates entering the workforce (Nicholson & Tattersall, 2001). Harveyac knowledges that ALIA does scrutinize the courses for currency and relevance (Harvey, 2004). This has been achieved through the Annual Course Return (ACR) by each university (Hallam, 2006).

# LIS Education in Australia: Some Issues

Some issues related to the LIS education have been discussed by different scholars. Harvey (2001) has discussed education for librarianship in Australia and made a comparison with the US and Canada. (Berry, 2004; Dillon & Noris 2005; Stoffle & Leader, 2005) favored some changes in LIS education. Gorman (2004) notes some 'critical issues requiring attention' while Gerolimos (2009) highlights several issues which are having an impact on the present context of educational delivery for LIS. These issues includes internationalization of LIS education, uniformity of qualifications, orientation of LIS education and competition with other disciplines involved in the management of information (Partridge, Menzies, Lee & Munro, 2010).

# Broad Employment Landscape

The LIS field embraced the multi-disciplinary nature of the profession. As a result, there was a need for LIS education to consider the course recognition requirements of other associations such as Computer Society and the Records management Association of Australia (Partridge & Yates, 2012). This move had important ramifications which, by and large, 'still support traditional definitions of the roles, functions, and audiences of archives, libraries, and museums'(Trant, 2009). Partridge and Yates (2012) mentions that due to this scenario, 'national standards for curriculum are no longer clear cut or consistent'. A bell (2006) stresses that the landscape of information management is not only changing the roles in the traditional LIS employment sector but is leading to the creation of new employment opportunities. Notably, opportunities for LIS products exist not only in traditional libraries but in the areas such as knowledge management, records management, data management, web development etc. Biddiscombe (2001) opined that modern education should take into consideration the fact that there is a need for 'hybrid librarians'.

### LIS Students

Combes, Hanisch, Carroll and Hughes (2011) examined student's experiences of library and information science education across both the tertiary and vocational educators sectors in Australia. This study considers four major themes to find out how students feel about LIS education in Australia. These themes are: learning opportunities, learner characteristics, learning experiences, and learner outcomes. Students were found generally optimistic about the future of the LIS profession, and considered that technology will continue to play a key role in their future careers. (Carroll and Murray 2010; Muilenburg 2005; Williamson 2002).

# Mismatch between Salary and Qualifications

Universities qualifications in Australia are provided at several levels namely bachelors, graduate diploma and masters' degree. It is an irony that those who are holding masters degree are not receiving salaries commensurate to their qualifications. Harvey and Higgins (2003) point out that Australian Post-Graduate qualification within LIS field is not usually linked to higher salaries. This provides little incentive for prospective students to pay the extra cost incurred in pursuing masters degree.

# Decreasing Number of Educators

The number of LIS academics is decreasing which is an alarming situation in terms of the currency and relevance of curriculum in the dynamic area of LIS education. Genoni (2005) has pointed out that LIS educators appear to be substantially less than what is potentially possible as an industry practitioner within the workforce.

# Existence of a Multi-Tiered System

In Australia, a qualified LIS professional can acquire ALIA membership with a bachelor's degree in LIS, a graduate diploma, or a master's degree. This opens multiple routes to become a recognized professional worker in Australia. Harvey (2001) notes this scenario creates powerful stresses for LIS education in Australia. Carroll (2002) points out, 'one of the key dilemmas that has faced the library industry since the introduction of accredited tertiary/VET education has been the degree to which the two sectors of library employment converge'.

# Institutional Affiliations

LIS Education in Australia face issues about what Cronin (2002) has called the 'increasing difficulty in maintaining coherence of identity, image and purpose'. Harvey and Higgins (2003) notes that the 'discipline affiliations and faculty affiliations of Australian LIS schools indicated this clearly. The most common affiliations are information system, communication/media, education and business'. While some of the affiliations according to Harvey and Higgins, have been motivated by pragmatic rather than pedagogical, reasons as universities cut cost by grouping teaching areas into larger units, others have been actively sought by LIS faculty.

# Evolution of LIS Education in India

India is a multi-lingual and multi-cultural democratic country. English enjoys the status of subsidiary official language for national, political and commercial communication. Urban population in India is 32.7% of the total population. Education expenditures in India were 3.8% of GDP. India's diverse economy encompasses traditional village farming, modern agriculture, and wide range of modern industries and multitude of services. Slightly less than half of the workplace is in agriculture but services are the major source of economic growth, accounting for nearly 2/3rd of India's output but employing less than 1/3rd of its labor force. Sector wise composition of GDP in India is 16.1%, 29.5%, 54.4% respectively for agriculture, industry and services (Central Intelligence Agency, 2016).

LIS education in India was first started in 1901 when John Macfarlane, first librarian of the Imperial library has taken initiatives for in-service librarians training. This training was continued till 1906 (Khan 1996). Gaekwad of Baroda has invited W.A. Borden, an American student of Melvil Dewey for the development of library system and library education. Borden started a short term training program in library science in 1911. Asa Don Dickinson, the then Punjab University librarian started, in 1915, a three months apprentice program (Satija, 1993). The first PG Diploma course was started in 1937 by the University of Madras which was originally initiated by S.R. Ranganathan, in 1929, as a certificate course at Madras Library Association. Significantly, University of Delhi was the first to start a Masters course in library science in 1948 (Mangla, 1994) while Aligarh Muslim University (AMU) has the credit to first start a Bachelors course in library science. However, University of Delhi had been pioneer in introducing M.Phil and doctoral program in library science (Singh, 2003).

Government of India has taken many initiatives for the development of library education. The

Working Group of the Planning Commission on modernization of library services and informatics (1985-90) recommended setting up of a National Centre for Education and Research in LIS and also suggested for provision for grants to LIS schools (Kumar & Sharma, 1973). A Committee on National Policy on Library and Information System (CONPOLIS) was set up in 1985; its report recommended the use of information technology in LIS education and establishment of accreditation agency for the maintenance of standards. National Knowledge Commission (NKC) was constituted in 2005 which recommended the establishment of wellequipped institutions for progress of LIS education. The first committee for curriculum development was Kaula Committee constituted in 1990. Later on, Karisidappa committee was constituted in 2000 for curriculum development which recommended for substantial revision of curriculum.

# LIS Education in India: Challenges

Some of the issues and challenges pertaining LIS education in India have been discussed in the following paragraphs:

# Mushrooming of Library Schools

In India, there are around 181 departments/ colleges where Bachelor in Library and Information Science, Master in Library and Information Science, M Phil and PhD courses are available in library and information science (Singh & Chander, 2013). Singh (2003) notes that there is no check and balance on the emergence of LIS schools in India. As a result, a number of institutions had come into being without having basic facilities. Furthermore, this growth affected standard which further resulted unemployment in the job market. Moreover, scenario in many universities imparting education through distance mode is not impressive as they do not have adequate number of teaching centers and computer laboratories. Singh (2003) stresses that in the absence of feedback from students; teachinglearning process has become passive. Furthermore, the LIS schools in India are not enjoying the professional recognition like computer engineering and business administration (Jagtar & Malhan, 2010).

# LIS Curricula

Role of information professional is changing and expanding in every part of the world. Thus LIS schools are required to constantly take notice of the competencies required in this changing world.

Jagtar and Malhan (2010) stresses that course curricula should be constantly revised in order to meet the requirements of not only present time but also for the future. They note that, "LIS curricula not only needs more frequent revisions, but also have potential for ample expansions as information management is no more limited to print media". Phuritsabam and Devi (2009) also point out that in South Asian countries; traditional aspects such as cataloguing and classification dominate the curriculum. They are of the view that LIS syllabi in whole of the South Asian region are quite old and should be restructured with redefined objectives to accommodate emerging changes in libraries and expectations of the users. Pyati (2010) while highlighting an enhanced role for information policy in LIS education opines that the content based approach of an information policy course can complement more traditional courses within LIS programs, which often focus on skills development for employment. Pyatistates that, "LIS educators should embrace opportunity to develop future leaders and policy makers". Karisiddappa (2004) also favors the inclusion of information literacy in the LIS curricula.

# **Student Faculty Ratio**

In late 1950s, teaching faculty in library science schools in India were part time, usually drawn from the respective university and the university librarian used to function as the head of the department (Phuritsabam & Devi, 2009). The UGC committee in 1965 recognized the need for full time teacher in the schools/departments of library science. Indian UGC panel on library and information science in 1982 recommended that a university department should have adequate full time teaching staff and also full time head (Mangla, 1998). The Curriculum Development Committee (CDC) in 1992 recommended one professor, one reader and three lecturers for a department running Bachelor in Library and Information Science with not more than 40 students and Master in Library and Information Science with intake of 15 students. It further stressed that one additional teacher should be appointed for every additional 10 students (Singh, 2003). However, no department in the country is fulfilling the recommendation of the UGC. For example, the department of Library & Information Science at AMU has two professors, four associate professors and two assistant professors and is one of the largest departments in terms of faculty strength. However, the intake of Bachelor in Library and Information Science is 60 and that of Master in Library and Information

Science 25. Besides these two courses, library science as an optional subject is also being taught at B.A. Level and at present 15 students are enrolled in the first year and 6 in BA II year. Furthermore, more than 40 research scholars are also registered in PhD program. Notably, PhD students with old registration, requires more amount of time from supervisors to accomplish their work fast, thus, increasing the workload of the faculty members. Singh and Chander (2013) reports that around 5000 students are enrolled every year in the various courses related to library science in India.

# Accreditation

It is of paramount importance that standards and norms of education must be consistent in order to achieve academic excellence. Sharma (2005) indicates that all library schools in South Asia needs to meet certain uniform standards for the registration of students, curriculum updates, hiring of full time qualified faculty, excellent library science collections, research facilities and availability of computer labs for students and faculty members. Therefore, there is a need to have accreditation bodies in every South Asian countries to monitor the progress of library schools. Chakraborty and Sarkheel (2009) also observed that there is a need for the accreditation of LIS schools/departments to improve the quality education in library science.

# **Role of Professional Bodies**

In India, there are three prominent professional bodies namely, Indian Library Association (ILA); Indian Association for Special Libraries and Information Centers (IASLIC) and Indian Association of the Teachers of Library and Information Science (IATLIS). The formation of these three associations had come into being in 1933; 1955; 1969 respectively. The broad objectives of the ILA at the time of its inception were defined as: Furtherance of the library movement in India; promotion of the training of librarians; and improvement of the status of librarians. Significantly, in 1987, accreditation of institutions imparting library and information science education and training was also included (Indian Library Association, 2016). IASLIC governing body has created Special Interest Groups (SIG) on library and information education (Indian Association of Special Libraries and Information Centers, 2016). Notably, one of the aims and objectives of IATLIS formation was to promote exchange of ideas on education in library and information science (Indian Association of Teachers of Library and Information

Science, 2016). However, still, there is no national accreditation body for LIS education in India. Finally, India is a democratic country with multiparty system. In a democracy, number matters most. Unfortunately, all the three prominent associations, mentioned above, do not have encouraging numbers that may influence policy makers. With less than fifteen thousand members, these associations may not expect support from any political party.

# LIS Students

Indian society is yet to give due recognition to the library and information science profession. As a matter of fact, brilliant students join medical and engineering professions. After selecting courses namely M.B.B.S. and B.Tech, as their first choice, students aspire to get admitted in MBA, MCA, and other professional courses. Only left over students, in most of the cases, join library science courses. Jagtar and Malhan (2010) observed LIS programs were not offering situations to attract the best students for enrollment. Authors note 'LIS schools should also develop a body of knowledge that creates substantial demand in the market place and fetch high salaries for graduates'. Wijetunge (2009) stressed that while the educational authorities are keen to recruit the students with the best academic qualifications, 'the LIS educators too expect their students to possess entrepreneurial flair and an ability to work well as team member because these are valued by the world of work. It is essential for the library schools to attract students with these qualities if they are to be taken up by the employment market'. Singh (2003) also mentioned that LIS students are not enthusiastic in opting for library science as their first choice. Nevertheless; she suggests that more attention towards selection criteria is needed to attract the best brains. She notes 'even to attract middle level talent, incentives like scholarship and fellowship are needed. Merit should not be only criteria for admitting the students. Admission test and interview should also be adopted to select appropriate students'. She further suggests that good general knowledge, communication skills and desire to serve others should also be taken into consideration while selecting students.

# The Employability Scenario

Unfortunately, not many jobs are available, in the government sector. Unlike other professional courses like medical and engineering, LIS course providers rarely offer any placement opportunity. Career counseling and job placements are yet to be included within the periphery of LIS teaching obligations and/or curricula (Chakraborty & Sarkhel, 2009). Consequently, library schools are required to enormously expand their curricula and offer specialized courses in areas such as social informatics, business informatics, financial informatics, agricultural informatics, health informatics and legal informatics and so on. Jagtar and Malhan (2010) notes that library schools have tremendous opportunities to prepare information professionals to step into new roles such as knowledge engineers, information architects, information analysts, hypermedia specialists and decision support specialists.

# What India can do?

# Maintenance of Standards

In their study of standards of LIS education worldwide, Dalton and Levinson (2000)recommended three models that aim to establish and maintain the standards for library and information science education namely government monitoring; formalized LIS accreditation / approval processes; individual course/departmental standards. Therefore, there is a need to have accreditation agency in India. The Indian Library Association may be given the responsibility for the recognition of courses. With its dynamic and visionary president, Prof. Shabahat Husain, perhaps ILA will be able to adopt a conceptual approach in terms of articulating the core knowledge, skills and attributes. Indian LIS professionals should meet Human Resource Development (HRD) minister and Chairman of the UGC to convince them about the pressing need for a single professional body. In addition, office bearers from all the library science associations may try to raise this issue in the parliament via representatives of different political parties. Once accreditation agency is decided, it will open the doors for future progress of LIS education in India.

# Need for a National Level Project

In Australia, perhaps the landmark step occurred in 2009 with the inception of a national research project: *Re-conceptualising and repositioning Australian library and information science education in the twenty-first century* (Partridge, *et al.*). It is recommended that efforts should also be made to launch a national level project in India like Australia with the government funding. This project should attempt to examine how LIS education in India can produce LIS graduates with appropriate skills and knowledge in the fast changing library environment. The project team may be comprised of senior faculty members as well as library professional having a remarkable track record. They need to apprise the bureaucrats and core group of all political parties that the LIS sector can play a crucial role in realizing the cherished dream of former president APJ Abdul Kalam to see India as a knowledge super power by 2020.

# Improving its Global Rankings

The government of India through HRD ministry aimed at catapulting some Indian technology institute to the top league of global academic rankings. However, their poor a/'; cademic performance; international faculty ratio & international student ratio criteria etc. are what is holding them back. Directors of seven Indian Institutes of Technology met the HRD ministry officials recently and sought Rs 218,700 million as investment to improve their research output, faculty, infrastructure and international outlook in order to break in to the top 100 club of global university rankings by 2018 and top 50 by 2020 (Chopra, 2016). Similarly, Vice-chancellors of all the universities having LIS schools/department should try to convince the HRD minister and UGC chairman for enhancement in their budgets so that LIS education in India can be internationalized. This investment will result in generating institutional income through LIS education.

# **Cross-Country Cooperation**

In the present era, hardly, any field can make progress without regional and international collaboration. Undoubtedly, political, social and cultural differences between countries will act as barriers in collaboration and cooperation. However, serious efforts are needed to form crosscountry cooperation. LIS schools in India must take initiatives to form cross-country partnership with other countries of Asia to carry out joint research project, joint course development and ICT based learning through arrangement of workshops, seminars and conferences. Apart from growth in LIS sector, this academic partnership may result in the reduction of hostilities particularly between Indo-China and India-Pakistan relationship. Being important country in Asia, India should develop a high collaborative culture.

### Jobs vs. Wages

More than a jobs problem, India does have wages problem. Recently, almost 85 percent of the 3 million applicants for the government peon post were having PhD degrees in one of the states in northern India (Sabharwal, 2016). Likewise, in a central university for the post of semi-professional assistant, many applicants were with PhD degrees. In both the cases, applicants were already had a job. However, they were struggling with the menial wages. Ironically, people in the private sector get paid too little than their counter parts in the government sector. Notably, the large number of applicants for the government jobs are not only running towards overtly secured government jobs but also running away from low paying private jobs. Regulatory intervention is urgently needed from ministry of labor to remove this lacuna. Youth unrest witnessed in the form of agitations in various parts of the country can be countered effectively with removing this serious fault.

# Closer Liaison with Industry

In Australia, it was imperative that universities produce students who possessed not only discipline knowledge but also a high level of personal and interpersonal skills (Bennett, Dunne & Carre, 2000; Dearing, 1997). To fulfill the desire of industry, ALIA has maintained a close liaison with the industry. Unfortunately, in India, neither any university nor any association seeks any opinion from industry. It is recommended that the LIS sector in India should also have a closer liaison with industry so that the training to LIS graduates can be given as per the requirement of industry. This liaison with industry will also enhance the job prospects in the corporate sector.

# Professional Development Program

Though, in India orientation courses and refresher courses are conducted through UGC Human Resource Development Centers. However, these centers are located only in select universities of India. Furthermore, orientation course is provided only once and participation in refresher courses is also needed only twice. Therefore, a newly recruited Assistant Professor and Assistant Librarian are required to attend only one orientation course and two refresher courses for their promotion to associate professor and deputy librarian. This kind of participation does not provide an opportunity for career long learning. Therefore, LIS educators and practitioners in India should be encouraged for career long learning through professional development program on the pattern of Australia.

# Student Voices

India should take steps to conduct the study about the educational experiences of LIS students across the country. This study will reveal students expectations, perceptions and level of satisfaction with the LIS courses. Furthermore, the study will also help in developing a profile of current LIS students in India. In all likelihood, this step will generate enthusiasm among students for LIS education.

# Share to Survive

Many universities in India have incorporated some heavy IT stuff in their curriculum. This is particularly seen in research methodology course where statistics component is difficult to teach by the regular faculty members. Consequently, students do not receive sufficient inputs in the classrooms with regards to components such as descriptive statistics and inferential statistics. To solve this problem, subjects developed by a consortium like Australia be encouraged.

# **Regional Diversity**

India is a vast country and area wise ranks seventh in the world. Ironically, all the good schools/departments are located in the northern part of the country. Government must make efforts to open some good institutes in other parts of the country. Initiatives may be taken for national institute of higher learning in the southern part of India. This will bring regional diversity.

# Help from Australia

India and Australia both enjoy good relationship in various fields. Apart from sharing political, economic, and security relations; both the countries have very old sporting ties. Greg Chappell, a brilliant Australian cricketer was appointed coach for Indian cricket team in 2005 to prepare team for the crucial World Cup tournament. Another Australian, Ric Charlesworth, one of the greatest hockey minds was also appointed in 2008 as technical advisor to men's and women's hockey teams. Significantly, both the Australians have identified many-many problems associated with the Indian sports and subsequently proved themselves high-performance managers for Indian cricket as well as hockey teams. Therefore, India should also seek help from Australia with an aim to bring reforms and improvements in the academic fields including LIS sector.

# What Australia can do?

# 457 Visa Issue

Australian PM Malcolm Turnbull's four-day visit to India in mid April, 2017 was followed by a 'review' of the 457 visa program, which is used by a large number of Indian skilled professionals, particularly in IT sector. This move has raised concern among Indians who forms about 25 per cent of 457 holders particularly at a time when the US president Donald Trump has also adopted a hard line on immigration. Therefore, the Australian government should be lenient towards the 457 visa program.

# LIS Education Program

India forms the second largest group of overseas students in Australia. This has been possible due to the generous visa conditions. Notably, Indian students recognize that Australia provides really high quality education in the world class universities. However, LIS students in India are not much aware that they can receive education in flexible learning atmosphere of Australia. Therefore, some awareness should be provided using various tools to let LIS students "You can come back to India with a top-notch qualification and work experience".

# Memorandum of Understanding

Australia may take initiatives in signing Memorandum of Understanding with the Indian Universities to enable exchange of LIS faculty members and students from both the countries. This move will particularly benefits faculty members as well as students of India.

# Scholarship

There are some bright Indian students in the field of library science who cannot pursue their masters and doctoral degrees in Australia due to high fees. Through library science scholarships, Australia can help those students who are eager to enhance their academic qualifications in globally reputed universities in Australia.

# **Better Protection to Students**

Between 2008 to 2012, a series of attacks on

Indian students including one murder in Australia have prompted anger in the Indian sub-continent. Better protection to Indian students will repair the reputational damage caused by these violent incidence in Australia. It is worth noting here that foreign students were worth nearly \$ 20 billion to Australia's economy in 2016.

# **RESULT AND DISCUSSION**

In both India and Australia, the objective of LIS education is to provide trained man power to work into different kinds of set up. The application of information technology contents in the syllabi of LIS has broadened the scope of LIS field. Therefore, LIS graduates should be well equipped to work not only in traditional libraries but also in a library with the state-of-the-art set up in its different divisions. In both India and Australia, it is argued strongly that the LIS curricula should be matched with the expectations of the employer. However, in India, syllabi of many universities are quite old and need to be restructured (Singh, 2003). Unfortunately, some of the universities still need to implement model curriculum designed in 2001 by the Curriculum Development Committee. Rather, there is an urgent need to constitute another committee for re-designing new curriculum as report of the CDC is close to two decades old. Furthermore, no significant head way has been made regarding National Knowledge Commission which recommended for revamp of LIS education, training and research.

In Australia, ALIA launched its professional development program way back in 2000 to encourage members with respect to career long learning (ALIA, 2005d). Furthermore, ALIA accreditation means that courses have passed rigorous assessment by senior professionals and hence it acts as an assurance for students for a bright career in the LIS sector. Hallam also mentioned that distinction has been made in the professional development program between the necessity of developing both LIS specific areas such as acquisition and management of resources and generic areas like effective communication, critical and evaluative thinking. Efforts are also needed in India on the similar lines. The lots of best students in India initially try their lucks for medical, engineering and management courses and mostly left-over students join LIS courses. Jagtar and Malhan (2010) suggested that LIS schools must develop a body of knowledge that might create substantial demand in the market to fetch high

salaries. Unemployment in LIS can be cited another reason for not attracting brilliant students in India. While in Australia, the unemployment rate for library professionals was below average compared with the total Australian workforce (ALIA, 2016).

Accreditation is necessary to achieve academic excellence. However, there is no national accreditation body in India. In the context of LIS education, expansion and inclusion is not a problem, but quality of education. Significantly, the Australian Library and Information Science Association (ALIA) has recognized the courses related to library and information science in the country. ALIA acts as the standard body for the library and information profession. It holds the responsibility for the recognition of courses that provide a library and information qualification (Hallam, 2007). Results of ALIA accredited institutions in the Excellence in Research for Australia evaluation conducted in the Australian Research Council; Monash University was rated above world standard and Queensland University Technology at World standard for their research output in the field of library and information studies (ALIA, 2016). On contrary, 'No Indian university comes close to the world's best. The three key criteria that push Indian institutions down in global rankings are: Teachers, libraries and good research. All three are inter related. Good teachers need assured careers with eager students and a rich library' (Krishna Kumar, 2016).

On being compared, situation in Australia is far better regarding LIS education. Undoubtedly, national research project: Re-conceptualising and repositioning Australian library and information science education for the twenty first century has played an imprtnat role in the growth and improvement of LIS sector. Government of India should also come forward to examine carefully the existing scenario pertaining LIS sector so that progress can be made in this important sector. Furthermore, the role of universities, Professional Associations, and individuals cannot be ignored: 'Library schools don't operate in a vacuum. LIS education need a healthy infrastructure involving faculty, students, alumni, and practitioners' (Ling Hwey Jeng, 2005). Hallam (2007) reports that LIS education requires concern, cooperation and collaboration today, tomorrow and future. Australia marched ahead significantly showing concern, cooperation and collaboration. If India wishes to make the notable success in LIS education, it also needs to take necessary steps to meet the country's requirements through revamp of LIS education and training.

# CONCLUSION

There is a very rapid change in Indian society and economy that is underway at a time when the whole world is witnessing transformation. India and Australia have worked together to counter many challenges including violent extremism. As a matter of fact, no country can make progress in isolation. Hence, India can chalk out strategies in order to bring reforms in LIS education in cooperation with Australia.

With the passage of time, LIS had grown and developed into a full fledged discipline. It is estimated that approximately 181 LIS departments affiliated to universities and colleges are offering LIS education in regular and distance mode. Many issues and challenges concerning LIS education have been faced by the LIS professional in India. (Singh, & Chander, 2013). Mushrooming of library schools, LIS curricula, accreditation problem, unemployment, student faculty ratio and quality of students are of significant concerns in India. Concerns for the improvement in LIS education have also been shown by the government of India. However, more efforts are needed to carry out significant improvements.

Australia has paid more attention in response to array of issues concerning LIS sector. This is evident in the trend report which has been compiled annually by ALIA with reference to LIS education, skills and employment. Current report says,' Although the LIS workforce is small, our sector has significant reach and profile because millions of Australian uses library services'. India also needs to make continuous efforts on the pattern of Australia to bring substantial improvements in LIS sector. Unfortunately, in India, UGC do not put sufficient pressure on universities as they are autonomous bodies. Consequently, academic criteria and standards set by the UGC are followed by some universities and neglected by others. Hence, there is an urgent need to establish some national body for quality control mechanism. Furthermore, there is no emphasis on life-long learning process in India. On contrary, LIS professionals in Australia are encouraged for life-long learning process which is linked to their professional success. ALIA launched professional development program to ensure career-long learning for LIS professionals. India should also start such programs.

In recent years a remarkable success has been achieved in LIS sector of Australia. This has been possible with the identification of a range of issues confronting LIS education in the country. Possibility of addressing these issues occurred through a national research project: Re-conceptualizing and re-positioning Australian library and information science education for the twenty first century. The purpose of the project was to chalk out a framework for preparing LIS professional for the twenty first century. Having recognized the three major and equal stakeholders in the education, process students, educators and employers; the project was framed around three areas that represented three key stakeholders groups in LIS education (Partridge & Yates, 2012). It is recommended that India should also launch a national level project to identify challenges confronting LIS education in India. This project team should comprise of versatile and visionary professionals with an aim to prepare library professionals for rapidly changing library environment. Knowing student's voice is also vital as they are one of the stakeholders in library education. Australia has undertaken a project under the department of higher studies to find out the perception of LIS students. There is also a need to examine experiences and perceptions of LIS students in India. Voices of students about LIS curriculum, teachers and their teaching methods, infrastructural facilities will be vital for making improvements in different spheres of LIS sector.

Significantly, education is an important determinant of the quality of human resource. It not only equips an individual with skills, but also allows an individual to choose among the larger set of opportunities and thus become a tool for empowerment. An important challenge of education in India is to improve its quality. Steps taken by the government of India are not sufficient to respond emerging information scenario. Therefore, growth strategies in India may be formulated on the lines of steps taken in Australia for the improvement in LIS sector. India has a significant advantage of being a country with one of the largest and youngest populations. However, India needs to make persistent efforts not only channel this demographic advantage but also need to fight to counter bureaucratic hassles, nepotism and territorial conflicts in various Library associations. As a matter of fact, higher education sector in the country is in a bad shape. Consequently, no Indian university finds place in the global rankings (Krishan Kumar, 2016). Solution to this problem lies in revitalizing technical education. It involves increasing budget of higher education, tightening recruitment procedure of faculty members, reducing the intake of students, producing quality research outputs etc. The key to find Indian presence

in the global LIS scenario is accreditation. Without getting institutions to take accreditation seriously and tightening the accreditation procedure, Indian LIS education cannot establish its hegemony even in South Asia, needless to say the worldwide. However if serious approach to improve the higher education, in general, and LIS, in particular, is adopted, India will be a knowledge super power by 2030, if not by 2020.

# REFERENCES

- 1. Abels, E. G., Howarth, L. C. & Smith, L. C. (2016). Envisioning our information future and how to educate for it. *Journal of education for library and information science*, 57(2).
- Abell, A., (2006). Roles in the e-landscape. Business Information Review, 23(4), 241-251.doi: 10.1177/0266382106072249.
- AC Nelson Research Services (2000). Employer satisfaction with graduate skills: research report. Retrieved from http://www.dest.gov.au/archive/ highered/eippubs/eip99-7/eip99\_7 pdf.pdf.
- 4. Agarwal, U. K. (2005). Visible State of library Education in Rajasthan. In Shubha Tiwari (Ed.), *Education in India* (pp. 1-2). New Delhi: Atlantic.
- Australian Library and Information Association (2010). Enrolments in Library and information management courses. Retrieved from http://www. alia.org.au /employment/ enrolment.courses/.
- Australian Library and Information Association (2016). LIS Education, Skills and Employment, Trend Report. Retrieved from https://www. alia.org.au/sites/default/files/ALIA%20LIS%20 Education%20Skills%20and%20Employment%20 Trend%20Report%202016\_0.pdf.
- Australian Library and Information Science Association (2005a). ALIA's role in education of library and information professionals. Retrieved from http://www.alia.org.au/policies/education. role.html.
- Australian Library and Information Science Association (2005b). Courses in library and information management. Retrieved from http:// www.alia.org.au/policies/courses.html.
- Australian Library and Information Science Association (2005c). Library and information sector: coreknowledge, skills and attributes. Retrieved from http://www.alia.org.au/policies/ core. knowledge.html.
- 10. Australian Library and Information Science Association (2006c). ALIA recognition of courses: Criteria for recognition of first award courses in library and information technician level. Retrieved from http://www.alia.org.au/education/courses /criteria.html.

- 11. Australian Library and Information Science Association (2006d). Employer roles and responsibilities in education and professional development. Retrieved from http://www.alia. org.au/policies / information.centres.html.
- 12. Berry, J. N. (2004) Blatant Berry: Don't Dis the LIS "Crisis". Library Journal. Retrieved from http:// www.Libraryjournal.com/article/CA456234.html.
- 13. Biddiscombe, R. (2001). The development of information professionals' needs for internet and IT skills: experiences at the University of Birmingham. Program, 35(2), 66-157.
- 14. Blainey, G.(1968). A shrinking world keeps its own distance. Retrieved from http//old.smh.com.au/ news/020/18/opinion/opinion 1.html.
- 15. Bennett, N., Dunne, E., & Carre, C. (2000). Skills development in higher education and employment. A London: The society for Research into Higher Education & Open University Press. Philadelphia: Society for Research into Higher Education & Open University Press.
- 16. Carroll, M. (2002). The well-worn path. *Australian Library Journal*, 51(2), 117-125.
- 17. Carroll, M. & Murray, J. (2010). Swirling Students: A study of Professionals and Vocational Training Avenues for the Library and Information Industry. *Library Trends*, 59(1), 188-207.
- Central Intelligence Agency (2016). The World Fact book-Australia. Retrieved from https://www.cia. gov/library/publications/resources/the-worldfactbook/geos/as.html.
- 19. Central Intelligence Agency (2016). The World Fact book-India. Retrieved from https://www.cia. gov/library/publications/resources/the-worldfactbook/geos/in.html.
- Chakraborty, S. & Sarkhel, J.K. (2009). LIS education in India: an appraisal of the parity between the syllabus and the market demands. Proceedings of the World Library and Information Congress: 75th IFLA General Conference and council, Milan, Italy. Retrieved from https://www.ifla.org/pastwlic/2009/86-chakraborty-en.pdf.
- 21. Chawner, Brenda (2015). Library and Information Studies Education in New Zealand and Australia: Background, Issues, and Challenges. *Journal of Education for Library and Information Science*, 56 (1), S17-S26.
- 22. Chopra, Ritik (2016, November 15). IITs estimate cost of improving its global *rankings*. *The Hindustan Times*,*p*.5.
- Combes, B., Hanisch, Jo, Carroll, M. & Hughes, H. (2011). Student voices: Re-conceptualising and repositioning Australian library and information science education for the twenty-first century. *International Information & Library Review*, 43(3), 137-143.
- 24. Cronin, B. (2002). Holding the center while prospecting at the periphery: domain identity and

coherence in North American information studies education. *Education for Information*, 20, 3-10.

- 25. Dearing, Ron (1997). *Higher education in the Learning Society.* Leeds, England: National Committee of Inquiry into Higher Education.
- Dillon, A., & Norris, A. (2005). Crying Wolf: An Examination and Reconsideration of the Perception of Crisis in LIS Education. *Journal of Education for Library and Information Science*, 46(4), 280-298.
- 27. Genoni, P. (2005). The changing face of LIS higher education in Australia, part 2. *in Cite*, 26(8), 18.
- Gerolimos, M. (2009). Skills developed through library and information science education. *Library Review*, 58 (7), 527 – 540.
- Gorman, M. (2004). Whither library education. New Library World, 105(9/10), 376-380. doi:10.1108/03074800410557330.
- Gorman, M. (2011). Confronting the Crisis in Library Education: Satellite Broadcast and Webcast. Proceedings of the National Teleconference. Retrieved from http://www.Dupage press.com/no\_cache/library learning-network/previous-teleconferences/ala.
- Hallam, Gillian (2006). Trends in LIS education in Australia. In Khoo, C. & Singh, D. and Chaudhry, A.S., (Eds). Proceedings of the Asia-Pacific Conference on Library and Information Education and Practice 2006, Preparing information professionals for leadership in the new age(pp. 41-51). Retrieved from http://arizona.openrepository.com/arizona/ bitstream/10150/105355/2/07.
- 32. Hallam, Gillian (2007). Education for library and information service. In Ferguson, S. (Ed.), *Libraries in the twenty first century: Mapping future directions in information services* (pp. 310-336). Waga wagga NSW:Centre for Information Studies.
- 33. Harvey, R. (2001). Losing the quality battle in Australian education for librarianship. *Australian Library Journal*, 50(1), 15-22.
- 34. Harvey, R. (2004). Changes in the librarianship curriculum: Where are we heading? *Australian Law Librarian*, 12 (2), 33-36.
- Harvey, R., & Higgins, S. (2003). Defining fundamentals and meeting expectations: Trends in LIS education in Australia. *Education for Information*, 21(2/3), 149-157.
- Indian Association of Teachers of Library and Information Science (2016). About IATLIS. Retrieved from https://sites.google.com/site/ iatlishome/about-iat.
- Indian Association of Special Libraries and Information Centres (2016). Activities SIG on Library & Information Science Education. Retrieved fromhttp://www.iaslic1955.org.in/Default. aspx?PageId=83.
- Indian Library Association (2016). About ILA: Vision Mission. Retrieved from http:// www.ilaindia.net/index.php?option=com\_

content&view=article&id=4:vision-mission&catid =8&Itemid=111.

- Jagtar Singh & Malhan, I.V. (2010). Trends and Issues in LIS Education in India. Proceedings of the IFLA Satellite Meeting. Retrieved from *http://conf. euclid-lis.eu/index.php/IFLA2010/IFLA2010/paper/* download/15/15.
- 40. Karsiddappa, C.R. (2004). LIS curriculum from the developing countries. Proceedings of the 70th IFLA General Conference and Council World Library and Information Congress. Retrieved from http://ec2-54-194-84-58.eu-west-1. compute.amazonaws. com/ greenstone /collect/toolbox/index/assoc/HASH01e5. dir/Library%20And%20Information%20Science%20 Curriculum.pdf.
- 41. Kaur, Trishanjit (2015). Challenges and Concerns for Library and Information Science (LIS) Education in India and South Asia. *Journal of Education for Library and Information Science*, 56 (1), S17-S26.
- 42. Khan, M. A. (1996). Library Science Education in India. New Delhi: Sarup.
- 43. Khurshid, Anis (1976). Intellectual foundations of library education. *International Library Review*, 8, 3-21.
- 44. Krishan Kumar & Sharma, J. (1973). *Research libraries in developing countries*. New Delhi: Vikas.
- 45. Krishan Kumar (2016, October 11). Shortcut to scholarship. *The Indian Express*, p.9.
- Ling Hwey Jeng (2005). The points of ALA Task Force on Library School Closing. PRISM, 13(2). Retrieved from:http://www.ala.org/ala/accreditation/prp/ prism/prismarchive/FA05 v13i2.pdf.
- 47. Macauley, P (2004). Challenging librarians: The relevance of the doctorate in professional practice. Challenging ideas. In Janine Schmidt (Ed.), Proeedings of the ALIA 2004 Biennial Conference. Retrieved from http://dro.deakin.edu.au/view/ DU:30005313.
- Mangla, P.B. (1994). Library and Information Science Education in South Asia: India, Pakistan, Bangladesh and Sri Lanka. *Education for Information*, 12(4), 399-427.
- Mangla, P. B. (1998). Library and Information Science Education: Trends and issues. In Jain, M. K., (Ed.), Fifty years of Library and Information Services in India (pp. 285-293). New Delhi: Shipra.
- 50. Miwa, M. (2006). Trends and Issues in LIS Education in Asia. Journal of *Education for Library and Information Science*, 47(3), 167-180.
- 51. Muilenburg, L.Y., & Berge, Z.L. (2005). Student barriers to online learning: a factor analytic study. *Distance Education*, 26(1), 29-48.
- 52. Mulvaney, J. P., & O'Connor, D. (2006). The crux of our crisis. *American Libraries*, 37(6), 38-40.
- 53. My burgh, S. (2003). Education directions for new information professionals. *Australian Library Journal*, 52(3), 213–228.

- 54. National Knowledge Commission (2007). *Report to the nation 2006*. New Delhi: National Knowledge Commission.
- 55. Nicholson, J. & Tattersall, N. (2001, Nov.). Issues, challenges and directions in education and training for the current and future library and information services sector: an association perspective. Proceedings of the ALIA LISEKA Ideas Forum.
- Partridge, H. & Yates, C. (2012). A frame work for the Education of the Information Professionals in Australia. *The Australian Library Journal*, 61(2), 81-93.
- Partridge, H., Menzies, V., Lee, J. & Munro, C. (2010). The contemporary librarian: skills, knowledge and attributes required in a world of emerging technologies. *Library and Information Science Research*, 32, 265-271.
- Phuritasabam, B. & Devi, P. (2009). Trends in Library and Information Science Education in South Asia: Issues and Challenges. Proceedings of the Asia-Pacific Conference on Library & Information Education and Practice. Retrieved from http://www.slis.tsukuba. ac.jp/a-liep2009/proceedings/Papers/a23.pdf.
- 59. Planning Commission (1984). Report of the Working Group of the Planning Commission on Modernisation of Library Services and Informatics for the Seventh Five Year Plan 1985-90. New Delhi: Planning Commission.
- 60. Poynton, C (2004). Received wisdom. *Managing Partner*, 10(9).
- 61. Pyati, Ajit. (2010). Understanding the role of Information Policy in LIS education. *Feliciter*, 56(3), 116-117.
- 62. Ranganathan, S.R. (1965). *Review Committee Report* on Library Science in Indian Universities. New Delhi: University Grants Commission.
- 63. Rochester, M.K. (1997). *Education for Librarianship in Australia*. New York: Mansell.
- 64. Sabharwal, Manish (2016, November 21). Jobs vs Wages. *Indian Express*, p. 10.
- 65. Satija, M.P. (1993). Research in Librarianship before and after Ranganathan. In Navalani, K and Satija, M.P. (Eds.), Pettits petals: A tribute to S R Ranganathan (pp. 27-45). New Delhi: ABC Publishing House.
- 66. Seavey, C. A. (2005). The Coming Crisis in Education for Librarianship. *American Libraries*, 36(9), 54-56.
- 67. Sharma, R. N. (2005). Development of Library and Information Science Education in South Asia

with Emphasis on India: Strengths, Problems and Suggestions. Journal of Education for *Library and Information Science*, 46(1), 77-83.

- Singh, K.P. & Chander, H. (2013). Professional Inclination of Library and Information Science (LIS) students of India: A Study of Socioeconomic Background and Career Choice Factors. *International Journal of Knowledge Content Development & Technology*, 3(2) 5-15.
- 69. Singh, S. P. (2003). Library and Information Science Education in India: Issues and Trends. *Malaysian Journal of Library & Information Science*, 8(2), 1-17.
- Stoffle, C. J., & Leeder, K. (2005). Practitioners and library education: A crisis of understanding. *Journal* of Education for Library and Information science, 46(4), 312–319.
- Trant, J. (2009). Emerging convergence? Thoughts on museums, archives, libraries, and professional training. Museum Management & Curatorship, 24(4), 369-387. doi:10.1080/09647770903314738.
- 72. University Grants Commission (1992). Report of the Curriculum Development Committee on Library and Information Science. New Delhi: University Grants Commission.
- 73. University Grants Commission (2001). *Model Curriculum Library and Information Science, Report.* Retrieved from http://www.ugc.ac.in/policy/ model-curr.html.
- 74. University Grants Commission (1986). *National policy on library and information system–A presentation.* Report of the Curriculum Development Committee. New Delhi: University Grants Commission.
- 75. Whitmell & Associates (2004). Preparing for demographic change: Workforce and succession planning of the Australian technology network. Ontario, Canada: Whitmell and Associates.
- 76. Williamson, K. (2002). Research methods for students, academics and professionals: Information management and systems (2nd ed.). Wagga Wagga, NSW: Centre for Information studies Charles Stuart University.
- 77. Wijetunge, P. (2009). Selection of students to LIS education programmes in Sri Lanka and some related issues. *Proceedings of the 27th Conference of the Indian Association of Teachers of Library and Information Science* (IATLIS), India. Patiala: Punjab University.



# STATEMENT ABOUT OWNERSHIP AND OTHER PARTICULARS "Indian Journal of Library and Information Science" (See Rule 8)

1. Place of Publication	:	Delhi
2. Periodicity of Publication	:	Quarterly
3. Printer's Name	:	Dinesh Kumar Kashyap
Nationality	:	Indian
Address	:	3/259, Trilokpuri, Delhi-91
4. Publisher's Name	:	Dinesh Kumar Kashyap
Nationality	:	Indian
Address	:	3/259, Trilokpuri, Delhi-91
5 Editor's Name	:	Dinesh Kumar Kashyap
Nationality	:	Indian
Address	:	3/259, Trilokpuri, Delhi-91
6. Name & Address of Individuals	:	Red Flower Publication Pvt. Ltd.
who own the newspaper and particulars of	:	41/48, DSIDC, Pocket-II
shareholders holding more than one per cen of the total capital	t	Mayur Vihar, Phase-1, Delhi-91

I, **Dinesh Kumar Kashyap**, hereby declare that the particulars given above are true to the best of my knowledge and belief.

Sd/-(Dinesh Kumar Kashyap)

# Scientometric Portrait of Prof. M. Santappa

B. Shanthi<sup>1</sup>, K. Thangarasu<sup>2</sup>, S. Thanuskodi<sup>3</sup>

How to cite this article: B. Shanthi, K. Thangarasu, S. Thanuskodi. Scientometric Portrait of Prof. M. Santappa. Indian J Lib Inf Sci 2024; 18(1):21–26.

### Abstract

In this paper, 357 articles published by Prof. Dr. Santappa, a Polymer Chemist, were collected from various sources and analysed. Out of these 8 articles are single authored and the remaining 349 are multi-authored papers. He has published in 56 reputed journals. He is a role model Scientist to young researchers.

Keywords: Santappa; Scientometrics; Polymer Science; Leather Science; Physical Chemistry; CLRI.

### INTRODUCTION

Scientometrics is the field directly concerned with the exploration and evaluation of scientific research. Scientometric studies of an Individual scientist deal with the biographical study of the individual and it correlates with his/her scientific achievements. Mushi Santappa was born in Jonnagiri village, Andhra Pradesh on 2nd October 1923. He did his undergraduate in Chemistry at the University of Madras (UOM) in 1943. He obtained his master's

Authors Affiliation: <sup>1,2</sup>Senior Technical Officer, Digital Library Unit, Knowledge Resource Centre, CSIR-Central Leather Research Institute, Chennai 600020, India, <sup>3</sup>Dean, Faculty of Arts, Department of Library and Information Science, Alagappa University, Karaikudi 630003, Tamil Nadu, India.

**Coressponding Author: S. Thanuskodi**, Dean, faculty of Arts, Department of Library and Information Science, Alagappa University, Karaikudi 630003, Tamil Nadu, India.

E-mail: thanuskodi\_s@yahoo.com

**Received on:** 23.01.2024 Accepted on: 22.02.2024

degree from Banaras Hindu University (BHU) in 1946. He was awarded a Ph.D. from the University of London on a Govt. of India Scholarship in 1949 and he obtained another Ph.D. from Manchester University in 1951. His thesis was based on the "Physical Chemistry of High Polymers."

He joined as a Reader in the Physical Chemistry Department of the UOM in 1952 and he became a professor in 1958 at the Madurai Extension Centre of UOM. He worked as the Head of the Physical Chemistry Department in 1963 and he served as a Senior Professor at the University of Madras from 1966 to 1971. Then, he was the Director of Central Leather Research Institute (CLRI) Chennai from 1972-78 and 1980-81. He was the Vice Chancellor of Sri Venkateswara University (SVU), Tirupati, during 1979-1980. He served as the Vice Chancellor of the University of Madras from 1981 to 1984. He has guided 57 Ph.D. research scholars. He has extremely contributed to environmental protection programmes. He co-established "Avanti Leather Limited", a public limited company in 1976.

He was an elected fellow of several academies such as the Indian Academy of Sciences, National

Academy of Sciences, Royal Institute of Chemistry, and New York Academy of Sciences, and a founder fellow of the Academy of Sciences. He was awarded the Shanti Swarup Bhatnagar award for his outstanding contributions to Chemical Science by the Council of Scientific and Industrial Research (CSIR) in 1967. In 1982 he was awarded the Sir J. C. Ghosh Memorial Medal of the Indian Chemical Society. In 1985 he was awarded the FICCI Award for Science, and Technology from the Federation of Indian Chambers of Commerce & Industry and he was awarded the Voice Award for Science and Technology of Leather from Sri Kanchi Mahaswamy Trust. He received an honorary DLitt from Gulbarga University and the Degree of Doctor of Science from four universities namely Andhra University, Madras University, Krishna Devaraya University, and Madurai Kamaraj University. An annual award named "Prof. M. Santappa Award" for research excellence in polymer chemistry was instituted by the Society of Polymer Science, India. He died on February 26th, 2017 at the age of 93.

### Review of Literature

William Shockley (1957) was the foremost writer to suggest scientific papers as a measure of research productivity. He was interested in measuring research productivity, among individual scientists/ researchers within a group by analysing their publications.

Subramanian (1983) in his bibliometric studies of research collaboration has mentioned that the degree of collaboration is the ratio of the number of collaborative research papers to the total number of research papers published in the discipline during a certain period of time.

Kalyane and Kalyane (1993) in their paper on the Scientometric portrait of Dr. Vinodhini Reddy, a medical scientist analysed her research publications quantitatively from the year 1960 to 1993 by authorship pattern, keywords, collaborators, and collaborative coefficient.

Kademani *et al.*, (1999) have measured the research productivity of Dorothy Crowfoot Hodgkin. She published her first paper at the age of 22 in the journal Nature. Her Collaborative coefficient was at its peak from 1952 to 1956 and it was 0.9. Her productive coefficient was 0.60 which shows that her publication productivity increased after her 50-percentile age. The study also reveals that she did not publish in four years: 1942, 1947, 1978 and 1985.

Kalaiappan *et al.*, (2010) carried out the analysis of 214 articles published between 1942 to 1990 by Prof. G.N. Ramachandran in the areas of Biophysics and Crystallography. On average, he contributed 4 to 5 papers in a year. His peak productivity was during 1962-1971.

Dixit, and Jange (2018) in their paper scientometric portrait of Prof. Gajanan R. Naik analysed the 114 papers published by him. They found the core collaborators Joshi G .V. who topped the list with 12 papers followed by Virupakshi S. with 10 papers and Gireesh Babu K. with 8 papers. They have estimated the total citations received as 383, the average citation per year as 22.59 and h-index as 8.

Suresh and Thanuskodi (2019) aimed to analyze the seed technology research output from 2008 to 2017. 8576 articles were downloaded and analyzed. The Degree of Collaboration was found as 92% which shows the collaborating authorship pattern was high in the seed technology discipline. The most productive journal was the International Journal of Food Science and Technology with 177 publications.

### **Objectives**

The main objectives of this study are to analyse the data pertaining to the publications of Prof. (Dr.) M.Santappa:

- To analyse the publication productivity in chronological order.
- To find the Average yearly contribution and Productivity coefficient.
- To examine the Authorship pattern and Degree of Collaboration.
- To explore the most preferred communication channels.

# METHODOLOGY

The data used for this study is secondary data and it was collected from the following databases: Scopus (118), Web of Science (243), Pubmed (4), Google Scholar (386), CrossRef (178), and in-house Leather Science journal (bound volume) (107). The search strategy used to retrieve the data was author name = "M. Santappa" or "Mushi Santappa". The bibliographical data such as the name of the authors, title, and source of documents, year and volume of publication, issue number, and article type were taken for analysis. The data collected was exported to Microsoft Excel, refined, and each record was elaborated for segregation and easy analysis. The data were analyzed using different Excel formulas. According to the objectives of the study, the results were tabulated.

### Data Analysis

Table 1: Chronological Distribution of Publications

### **Chronological Distribution of Publications**

The chronological distribution of the publications, chronological age, and productivity age details of Prof. Santappa are given in Table 1.

Year	Publications	Cumulative Publications	Productive Age	Actual Age
1951	1	1	1	28
1954	2	3	3	31
1955	2	5	4	32
1956	3	8	5	33
1957	3	11	6	34
1958	4	15	7	35
1961	3	18	10	38
1962	3	21	11	39
1964	2	23	13	41
1965	5	28	14	42
1966	6	34	15	43
1967	11	45	16	44
1968	19	64	17	45
1969	11	75	18	46
1970	12	87	19	47
1971	10	97	20	48
1972	9	106	21	49
1973	9	115	22	50
1974	27	142	23	51
1975	21	163	24	52
1976	24	187	25	53
1977	32	219	26	54
1978	29	248	27	55
1979	20	268	28	56
1980	12	280	29	57
1981	33	313	30	58
1982	32	345	31	59
1983	3	348	32	60
1984	1	349	33	61
1986	3	352	35	63
1987	1	353	36	64
1988	2	355	37	65
1989	2	357	38	66

From the data in Table 1, It is inferred that Prof. Santappa's has published 357 papers from the year 1951 to 1989. His first paper was published at 28 years of age in the year 1951. At the age of 58 i.e., in the year 1981 he has published a maximum of 33 papers. He had 38 years of publication productive life that is from the age of 28 to 66. From the year 1974 to 1982 his scientific productivity was more.

During the productive age, the Average yearly

Average Yearly Contribution 
$$A_{yc} = \frac{Total \ Contribution}{Total \ Productivity \ age} = \frac{357}{38} = 9.39$$

contribution of Prof. Santappa has been calculated using the formula.

The Average yearly contribution of Prof. Santappa is 9.39, which means onaverage he contributed 9 to 10 papers in a year from 1951 to 1989. His productivity age began at the age of 28, in the year 1951. His last paper was published in 1989 at the age of 66.

The Productivity coefficient is calculated using the following formula.

# $Productivity\ Coefficient\ P_c=\frac{Chronological age\ age\ of last\ publication}{Chronological\ age\ of\ fifty\ percentile\ age}=\frac{66}{47}=1.4$

The Chronological age of the last publication is 66. He has attained fifty percentile age at his productive age of 19 and chronological age of 47. The productive coefficient of Prof. Santappa is found as 1.4, which clearly indicates his consistent publication productivity behaviour through out his 38 years of scientific research.

Year			Num	ber of Au	thors	Single Authored	Multi-Authored	Degree of		
	1	2	3	4	5	6	7	— papers Ns	papers Nm	Collaboration
1951	0	0	1	0	0	0	0	0	1	1
1954	2	0	0	0	0	0	0	2	0	0
1955	0	2	0	0	0	0	0	0	2	1
1956	0	3	0	0	0	0	0	0	3	1
1957	0	3	0	0	0	0	0	0	3	1
1958	0	4	0	0	0	0	0	0	4	1
1961	0	3	0	0	0	0	0	0	3	1
1962	0	3	0	0	0	0	0	0	3	1
1964	0	2	0	0	0	0	0	0	2	1
1965	0	5	0	0	0	0	0	0	5	1
1966	0	4	2	0	0	0	0	0	6	1
1967	0	11	0	0	0	0	0	0	11	1
1968	0	18	1	0	0	0	0	0	19	1
1969	0	8	2	1	0	0	0	0	11	1
1970	0	12	0	0	0	0	0	0	12	1
1971	0	8	1	1	0	0	0	0	10	1
1972	1	5	3	0	0	0	0	1	8	0.89
1973	0	5	2	2	0	0	0	0	9	1
1974	0	4	11	7	4	1	0	0	27	1
1975	0	4	5	8	3	1	0	0	21	1
1976	0	5	9	6	3	1	0	0	24	1
1977	0	2	15	8	6	1	0	0	32	1
1978	0	4	10	11	4	0	0	0	29	1
1979	0	0	8	11	0	1	0	0	20	1
1980	0	0	8	4	0	0	0	0	12	1
1981	1	3	3	14	5	5	2	1	32	0.97
1982	1	2	10	16	3	0	0	1	31	0.97
1983	0	0	0	2	1	0	0	0	3	1
1984	0	0	1	0	0	0	0	0	1	1
1986	0	0	1	2	0	0	0	0	3	1
1987	0	0	1	0	0	0	0	0	1	1
1988	2	0	0	0	0	0	0	2	0	0
1989	1	0	0	1	0	0	0	1	1	0.5
Total	8	120	94	94	29	10	2	8	349	

Table 2:. Degree of Collaboration

### Degree of Collaboration and Authorship Pattern

Prof. Santappa's single authored papers, multi-authored papers, and Degree of collaboration are presented in Table 2.

Among the 357 articles published 349 papers were multi-authored papers and 8 were single authored papers.

Degree of Collaboration was calculated using the formula.  $D_{c}$ =  $N_{m}$ 

 Table 3: Authorship pattern

Authorship pattern	No. of Publications	Percentage %
Single Author	8	2.24
Double Author	120	33.61
3 Author	94	26.33
4 Author	94	26.33
5 Author	29	8.12
6 Author	10	2.80
7 Author	2	0.56

Total 357 100

In his productivity period of 38 years the Degree of Collaboration was 1 for 32 years, this implies the collaboration is high. The degree of collaboration was 0.97 in the years 1981 and 1982, Dc was 0.89 in the year 1972, Dc was 0.5 in the year 1989 and Dcwas 0 in the years 1954 and 1988.

#### Authorshi Pattern

The authorship pattern of Prof. Santappa is given in Table 3.

Prof. Santappa had published 8 (2.24%) articles individually, 120 (33.61%) articles with 1 collaborator, 94 (26.33%) articles with 2 and 3 collaborators, 29 (8.12%) articles with 5 collaborators, 10 (2.80%) articles with 6 collaborators, and 2 (0.56%) articles with seven collaborators. Thus, the collaborated research was found to be dominant with two authors followed by three and four authors. From the authorship pattern it is clear that collaborative research is dominant.

Table 4: Top Nine Channels of Communication preferred by Prof. Santappa

Journal	No. of papers	Cumulative No. of papers	FPY	LPY	TY
Leather Science	107	107	1983	1973	11
Indian Journal of Chemistry - Section A	34	141	1986	1964	23
Die Makromolekulare Chemie	19	160	1986	1955	32
Journal of Polymer Science - Part A-1: Polymer Chemistry	19	179	1987	1966	22
Proceedings of the Indian Academy of Sciences - Section A	19	198	1971	1965	7
Journal of Inorganic and Nuclear Chemistry	16	214	1977	1968	10
Journal of Scientific & Industrial Research	15	229	1988	1954	35
Current Science	9	238	1979	1964	16
Journal of Polymer Science - Polymer Chemistry Edition	7	245	1982	1974	9

### Channels of Communication Preferred by Prof. Santappa

Prof. M. Santappa's 357 publications were distributed in 56 journals. The top 9 channels of communication used by Prof. M. Santappa are provided in Table 4.

FPY-First Publication Year; LPY-Last Publication Year; TY = Total Years.

Maximum number of 107 papers by Prof. M. Santappa were published in the Leather Science journal, 34 papers were published in Indian Journal of Chemistry - Section A, 19 papers were published in each of the following three journals Die Makromolekulare Chemie, Journal of Polymer Science - Part A-1: Polymer Chemistry, Journal of Polymer Science - Part A-1: Polymer Chemistry, 16 papers were published in Journal of In organic and Nuclear Chemistry, 15 papers were published in Journal of Scientific & Industrial Research, 9 papers were published in the journal Current Science and 7 papers were published in Journal of Polymer Science Polymer Chemistry Edition. Leather Science was the top-ranking journal with 107 papers.

Indian Journal of Library and Information Science / Volume 18 Number 1 / January-April 2024

# CONCLUSION

A meticulous researcher and renowned Polymer Chemist, Prof. Santappa was awarded the Shanti Swar up Bhatnagar Award, for his extensive contributions to Science. The Society for Polymer Science, India has instituted an annual award, "Professor M. Santappa Award", in his honor, which recognizes excellence in research in Polymer Chemistry. He has published 357 papers in 56 journals. Out of which he has published 107 papers in Leather Science journals. The average yearly contribution is 9 to 10 papers. The productivity coefficient is found as 1.4. His scientific contributions will remain outstanding and will encourage youngsters to concentrate more on collaborative scientific productivity. His death is a great loss to the scientific community.

### ACKNOWLEDGMENT

The authors would like to thank the Director, CSIR-CLRI, and the Head, KRC, CSIR-CLRI for their support in conducting this scientometric study.

CSIR-CLRI Communication Number is A/2023/ KRC/MLP/1903.

### REFERENCES

- Dixit, G. P., & Jange, S. (2018). scientometric portrait of prof. Gajanan R. Naik. Current Research in Life Sciences, 7(04), 1599-1602.
- Kademani, B. S., Kalyane, V. L., & Jange, S. (1999). Scientometric portrait of nobel laureate Dorothy Crowfoot Hodgkin. Scientometrics, 45, 233-250.
- Kademani, B. S., Kalyane, V. L., & Kumar, V. (2001). Scientometric portrait of nobel laureate Ahmed Hassan Zewail. Malaysian Journal of Library and Information Science, 6(2), 53-70.

- Kalaiappan, V., Kaliyaperumal, K., & Rajasekar, V. (2010). Scientometric analysis of literature output of Prof. GN Ramachandran in the Subjects of Biophysics and Crystallography. DESIDOC Journal of Library & Information Technology, 30(6), 3.
- Kalaiappan, V., Yesudoss, P., (2018). Scientific analysis of research output of two Eminent scientists of India, International Journal of Library and Information Studies, 8 (1), 376-386.
- 6. Kalyane, V. L., & Kalyane, S. V. (1993). Scientometric portrait of Vinodini Reddy. Journal of Information Sciences, 4(1), 25-47.
- Shockley, W. (1957). On the statistics of individual variations of productivity in research laboratories. Proceedings of the IRE, 45(3), 279-290.
- Subramanyam, K. (1983). Bibliometric studies of research collaboration: A review. Journal of information Science, 6(1), 33-38.
- Suresh, N., & Thanuskodi, S. (2019). Seed technology research output: A scientometric analysis on SCOPUS database. Library Philosophy and Practice (e-journal), 115.
- Vinkler, P. (1990). Bibliometric analysis of publication activity of a scientific research institute. Informetrics. Amsterdam: Elsevier Science Publishers, 309-334.
- 11. http://images.google.co.in accessed on 3/7/23.
- https://clri.org/docs/2022/misc/prof\_ msantappa\_bio-rief\_with\_papers.pdf accessed on 24/8/23.
- 13. https://en.wikipedia.org/wiki/Mushi\_Santappa accessed on 3/7/2023.
- 14. https://peoplepill.com/people/mushi-santappa accessed on 5/7/2023.
- 15. https://www.currentscience.ac.in/ Volumes/112/10/2146.pdf accessed on 3/7/23.
- 16. https://www.ias.ac.in accessed on 14/7/23.
- 17. https://www.ncbi.nlm.nih.gov/pmc/ accessed on 6/7/23.
- 18. https://www.webofscience.com/wos/woscc/ basic-search accessed on 18/7/23.



# **Instructions to Authors**

Submission to the journal must comply with the Guidelines for Authors. Non-compliant submission will be returned to the author for correction.

To access the online submission system and for the most up-to-date version of the Guide for Authors please visit:

http://www.rfppl.co.in

Technical problems or general questions on publishing with **IJLIS** are supported by Red Flower Publication Pvt. Ltd.'s Author Support team (http://rfppl.co.in/article\_submission\_system.php?mid=5#)

Alternatively, please contact the Journal's Editorial Office for further assistance.

# Editorial Manager

Red Flower Publication Pvt. Ltd. 48/41-42, DSIDC, Pocket-II Mayur Vihar Phase-I Delhi - 110 091(India). Mobile: 9821671871, Phone: 91-11-79695648 E-mail: author@rfppl.co.in

# Shaping the Smart Search Possible: An Inside Story of ETD Metadata

# Shiva Kanaujia Shukla<sup>1</sup>, Shipra Awasthi<sup>2</sup>

#### How to cite this article:

Shiva Kanaujia Shukla, Shipra Awasthi. Shaping the Smart Search Possible: An Inside Story of ETD Metadata. Indian J Lib Inf Sci 2024; 18(1):29–33.

#### Abstract

Metadata is very important in scientific literature. Metadata in electronic dissertations and dissertations (ETDs) requires a modular workflow based on a flexible architecture. Metadata methods must be simplified by adapting procedures for different document formats and structures. The structure of the dissertation document, including Fig.s, tables, footnotes, etc., requires greater attention to the identification and organization of metadata in the ETD for rich textual content. Reliable extraction of appropriate metadata elements, such as title, author, abstract, keywords, etc., is essential for future citation capabilities. Such mechanisms are crucial for evaluating processes and adjusting ETD metadata to facilitate architecture expansion. Most modern ETDs rely on the organization of quality text documents, ranging from raw PDF documents or semi-structured XML documents to uniform standard TEI (Text Encoding Initiative) documents. The present study discusses metadata for MARC records in ETD, and access to ETD metadata in the context of the current scenario. It also highlights the tags adopted for the creation of the MARC records in JNU Central Library ETD System for simple-level learning.

**Keywords:** Electronic Thesis & Dissertation (ETD); Metadata; Digital Library; MARC Records; JNU Library.

# INTRODUCTION

Electronic Theses & Dissertations are considered Ea rich source of information for scholars. In the

Authors Affiliation: <sup>1</sup>Deputy Librarian, <sup>2</sup>Assistant Librarian, Jawaharlal Nehru University, New Delhi 110067, India.

**Coressponding Author: Shipra Awasthi**, Assistant Librarian, Jawaharlal Nehru University, New Delhi 110067, India.

**E-mail:** shipranit@gmail.com

Received on: 25.08.2023

Accepted on: 04.10.2023

past, such collections remained unused and were considered a piece to be stacked in the libraries. Despite being considered a valuable resource, the use of the collection is limited to a few scholars. The digital libraries were built to digitize the collection and maximize its use among the research community. The ETD collection is available through institutional repositories, national libraries, and archives to access freely anytime, anywhere (Fox, 2021).<sup>1</sup> The literature is significant in building new research and enriching the knowledge of the academic community in a particular area.

The myriad initiatives by universities and concerned scholars have come forward with innovative research to produce original, innovative, and future-oriented outcomes. Bringing out new research and ensuring quality are a few significant research concerns. Avoiding duplication of research is possible with the proper use of ICTs and using the best research outcomes. The modern version of the electronic submission of the thesis is considered an Electronic Theses and Dissertations (ETDs). In the best exploration of previously developed ETD, the metadata structure and its utility in the access is very much sought out action.

ETD repositories benefit students and institutions by enhancing education, expanding research, and increasing a university's visibility and use, thereby contributing to the impact and ranking of its parent institutions (Ahmed, Alreyaee and Rahman, 2014).<sup>2</sup> Some organizations and projects have supported creating an ETD database using open source software such as D space and E prints. Electronic theses and dissertations enhance not only the visibility of the research but also the prestige of an organization.

### Metadata Structure, Standards and Approaches

To facilitate wider access and reach to each minor component of ETD, the necessity of relevant keywords, domain specific vocabularies, and the role of authors is important. The development of a union catalog of ETDs is another example of enhancing the ETD reach among users. The use of standard language, controlled vocabulary, and metadata standards have also been associated with the metadata tagging of ETDs. Well, the tailored approaches tune into the metadata harvesting, and the transition from digital commons to the OCLC components has led to high quality records. (Banach, 2011; Potvin & Thompson, 2016; Han, et al. (2016); Lamba & Madhusudhan, 2018; Veve, 2016).<sup>29-33</sup> Surratt and Hill (2004)<sup>34</sup> described a semiautomated workflow for cataloging ETDs. A metadata query can be made using Perl script in an institutional database, and a MARC record is created for each ETD. The Connexion service imports the records into the Online Computer Library Center (OCLC) WorldCat database.

### Metadata Generation and Harvesting

There are multiple benefits of ETDs compared with printed theses for certain reasons such as greater visibility of research and access for a wider audience. Other factors also contribute to the proliferation of ETDs; the preservation and promotion of access towards finding a few cost effective methods to create metadata. Access to unique research contributions is possible due to technological advances based on data standards. Metadata generation methods are observed in different natures such as automated and semiautomated approaches. These methods are utilized to harvest ETD metadata from libraries' institutional repositories (IR). Various metadata generation approaches include mechanisms based on: completely automated approaches or Pro Quest Services based semi-automated approaches. There are a few more examples of semi-automated approaches, some of which are based on highly technical tools or the Marc Edit OAI Harvester.

# Metadata Extraction and Digital Library Searching

ETDs are rich in domain knowledge for digital library tasks. The other usages of ETDs can be found in the analysis of citation networks and the prediction of research trends. To create a scalable digital library search engine, automatic metadata extraction seems helpful. Various methods which support born digital documents (such as GROBID, CERMINE, and ParsCit) are usually observed to have limitations in extracting metadata from scanned documents. Traditional sequence tagging methods (based on text based features) and resource discovery include typographical and structural error improvements. It is observed that user supplied keywords may be useful for discovery. Still, theuse of controlled vocabulary can be found to fill the gap between the searcher's expectations and the author supplied vocabulary.

The policy of well cataloged theses/dissertations with the inclusion of "Library of Congress Subject Heading (LCSH) subject analysis and Library of Congress Classification (LCC)" can be useful in the case of ETDs for web based researchers. Also, text mining issues are related to extracting metadata. Few open source tools such as GROBID (Lopez and Romary, 2015)<sup>3</sup> may be useful for born digital information material but are helpless in the case of scanned documents usually related to ETDs. Extracting metadata from the scanned ETDs, it has been a practice to convert scanned pages into images and later text files with the application of OCR tools. This process captures patterns for seven metadata fields: titles, authors, years, degrees, academic programs, institutions, and advisors. The method is evaluated on a ground truth dataset comprised of rectified metadata.

# Metadata for MARC Record in ETD

While academic libraries have responsibilities for access and usage stories depending on the multiple options and mechanisms for access management, the metadata input emerges. Implications for digital libraries and customized mapping in context with metadata for ETDs have faced many models. Software and best practices (Vijaya kumar, Murthy & Khan, 2006; Deng & Reese, 2009; Lubas, 2009; Yañez, 2009).<sup>4,5,6,7</sup> The metadata generation, selection arrangements, etc. Are requisites for metadata workflow. The examples include "repurposing Pro Quest metadata for batch ingesting ETDs" (Averkamp & Lee, 2009)<sup>8</sup> whereas author supplied metadata, OAI-PMH, and XSLT to Catalog ETDs are few other significant aspects (Boock & Kunda, 2009; Robinson, Edmunds & Mattes, 2016).<sup>9,10</sup>

### Access to ETD Metadata

The basic questions related to electronic theses and dissertation (ETD) repositories are about their structure, development, and the extent to which their capability is assumed in university research management (McMillan, 2002; Yiotis, 2008).<sup>20,21</sup> The process and examples include the development of a heuristic baseline method for metadata extraction in the case of scanned electronic theses and dissertations (Choudhury *et al.*, 2020).<sup>22</sup> While metadata harvesting and extraction are other areas of routine concern (Veve, 2016; Choudhury *et al.*, 2021).<sup>23,24</sup>

The university libraries have observed dramatic changes in the growth and development of ETDs, yet building a distributed and heterogeneous system as well as (ETD metadata remediation has been in demand (Zhao & Jiang, 2004; Thompson *et al.*, 2019).<sup>25,26</sup> The formal models of ETDs have taken various aspects into account; several disciplines, structures, digital spaces, etc. are a few of them (Gonçalves *et al.*, 2004).<sup>27</sup> The proliferation of ETDs

in various areas has been experimented with. The technology development and models provide ways for implementation. Example sinclude publishing music related ETDs (Yang *et al.*, 2016).<sup>28</sup>

### Selection of Metadata in JNU Central Library

Central Library, JNU has selected the tags available in the virtua and koha software to create MARC records, as several tags are available for each record. The tags used in virtua software are 100 author information, 245 title, 260 for place, organization and year, 502 - type of document, 720 - name of the supervisor, and 856 - URL of the Pdf file (Fig. 1 and 2).

Central Library has used the following tags to create MARC records in the Koha software: 100 author, 245 - title, 502 - type of document, 700 - name of the supervisor, 710 - details of the department, 856 - URL of the Pdf file, 942 - theses/dissertations and name of the classification scheme (Fig. 3 and 4).

### Developments in ETD

The beginning of the new millennium witnessed the development of a Networked Digital Library of Theses and Dissertations (Suleman *et al.*, 2001).<sup>11</sup> Jin (2004)<sup>12</sup> also brought the visions of access through the smart development of ETDs (Mikeal *et al.*, 2007)<sup>13</sup> shortly. The digital library perspectives encompassed certain components such as *Content* dm as well as OCLC Systems (Howard & Goldberg, 2011)<sup>14</sup> for enhanced access to ETDs. In the same year, almost a decade ago the benefits and ETDs publishing through the open access repository was brought into the process.

The development of ETDs continued in the last decade with the proliferation of technology and the intimidating need for research

	nic Recor	UNL - D	Ann Neverth (Second Second)	(m) <b>X</b>
< > 1/	1			
Full   Items	MARC	c		
LDR			01446nam a2200277 a 4500	-
001			vtis000332215	
003			UNC	
005			20200114124800.0	
008			170902s2004 ii g 000 0 hin d	
039		9	\a 202001141248 \b babar \c 201709022027 \d somesh \c 201708231444 \d somesh \c 201708221348 \d somesh \y 200710011111 \z madhu \s 1W!	
041			la bio	
082		4	Ub To 18 Jo Ka	
			for succe for units	
100	1		\6.880-01 \a definer althur ager	
100	1	0	\6 880-01 \a (willing willing werg, \6 880-02 \a summers of theferer it stherfore from . \b street thefer / \c stitute sume definer \h [Theses].	
100 245 260	1	0	V6 880-01 (a émîteu; etituic querc. V6 880-02 (a exemence eté feutieux é étitutieu titerer : \b einer titeler / \c etituic querc émîteur. \h [Theses]. La ait touir - \h suercoura durc titeréteuraur. \c 2004.	
100 245 260 300	1	0	\6 880-01 \a (vitine, vitine, quee, \6 880-02 \a avancess et instruct a situative there : \b siver todes / \c vitine, quee (vitine. \h [Theses], \a at tout : \b sepress due thefiteese , \c 2004, \a 103 o. : \c 30 cm.	

Fig. 1



Fig. 2

transparency. Creating digital libraries for better management of ETDs (Fox, 2021)<sup>1</sup> also included the common submission system for ETDs. The ETDs development and management always envisioned using metadata, which required regular assessment and formulation of policies for a better service (Ghosh, 2009; Park & Richard, 2011; McCutcheon, 2011).<sup>15,16,17</sup> The simultaneous development of institutional repositories and digital libraries has opened new vistas in the shape of Open access which had its own issues and challenges. The quality of the thesis in the context of visibility, readability, and access were also concerns of the usual collection processes of libraries; ETDs have also observed the open asccess movements from the perspective of various issues and challenges for Research and Development (Khaparde & Ambedkar, 2014; Gunjal & Gaitanou, 2015).<sup>18,19</sup>

# CONCLUSION

The archiving of electronic documents is the latest trend due to long-term retention. ETDs repositories play a vital role in managing scholarly output at the university level and assist scholars in accessing it anytime, anywhere. The *Shodhganga* national repository presently contains 411187 full-text theses which facilitate the academic community in pursuing their scholarly projects. With the change in scenario, the role of library professionals is also changing in submitting the ETDs and creating metadata processes.

# REFERENCES

- 1. Fox E A. Building and using digital libraries for ETDs. The Journal of Electronic Theses and Dissertations. 2021;1(1):5.doi: https://doi. org/10.52407/LJQF5826.
- Ahmed A, Alreyaee S, Rahman A. Theses and dissertations in institutional repositories: an Asian perspective. New Library World. 2014; 115(9/10):438-451.
- Lopez P, Romary L. GROBID Information Extraction from Scientific Publications. Research and Innovation. 2015. 02 January 2015. doi: https://ercim-news.ercim.eu/en100/r-i/grobidinformation-extraction-from-scientific-publications.
- 4. Vijayakumar J K, Murthy T A V, Khan M T M. Experimenting with a model digital library of ETDs for Indian universities using D-space. Library Philosophy and Practice.2006;9(1).
- Deng S, Reese T. Customized mapping and metadata transfer from D Space to OCLC to improve ETD workflow. New Library World. 2009. doi:10.1108/ NLW-04-2014-0035.
- 6. Lubas R L. Defining best practices in electronic thesis and dissertation metadata. Journal of Library Metadata. 2009;9(3-4): 252-263.
- Yañez I. Metadata: Implications for academic libraries. Library Philosophy and Practice. 2009:1-8.
- 8. Averkamp S, Lee J. Repurposing Pro Quest metadata for batch ingesting ETDs into an institutional repository. In: Mc Intosh, Joyce (Ed). Cataloging and Indexing: challenges and solutions. Apple Academic, USA:2009.
- 9. Boock M, Kunda S. Electronic thesis and dissertation metadata workflow at Oregon State

University Libraries. Cataloging & Classification Quarterly.2009;47(3-4): 297-308.

- Robinson K, Edmunds J, Mattes S C. Leveraging author-supplied metadata, OAI-PMH, and XSLT to Catalog ETDs: A case study at a large research librarys. Library Resources & Technical Services. (2016);60(3):191-203.
- Suleman H, Atkins A, Gonçalves M A, France R K, Fox E A, Chachra V., Young J. Networked digital library of theses and dissertations. D-lib Magazine.2001;7(9):1082-9873.
- 12. Jin Y. The development of the China networked digital library of theses and dissertations. Online Information Review.2004.
- Mikeal A, Brace T, Leggett J, McFarland M, Phillips S. Developing a common submission system for ETDs in the Texas Digital Library. 2007.doi:https:// oaktrust. library.tamu.edu/handle/1969.1/5679.
- 14. Howard R I, Goldberg T. Facilitating greater access to ETDs through CONTENT dm. OCLC Systems & Services: International digital library perspectives. 2011;27 (2).
- Ghosh M. E-theses and Indian academia: A case study of nine ETD digital libraries and formulation of policies for a national service. The International Information & Library Review. 2009;41(1): 21-33.
- 16. Park E G, Richard M. Metadata assessment in etheses and dissertations of Canadian institutional repositories. The Electronic Library. 2011.
- Mc Cutcheon S. Basic, fuller, fullest: Treatment options for electronic theses and dissertations. Library Collections, Acquisitions, and Technical Services. 2011;35(2-3): 64-68.
- Khaparde V, Ambedkar B. Growth and development of electronic theses and dissertation (ETDs) in India. Journal of Library and Information Sciences.2014;2(1): 99-116.
- Gunjal B, Gaitanou P. (2015). ETDs and Open Access for Research and Development: Issues and challenges. In: 18th International Symposium on Electronic Theses and Dissertations Evolving Genre of ETDs for Knowledge Discovery (ETD 2015 India), New Delhi. 2015. pp.136-143.
- 20. McMillan G. ETDs and Libraries. Virginia Polytechnic Institute and State University, Virginia; 2002.
- 21. Yiotis K. Electronic theses and dissertation (ETD) repositories: What are they? Where do they come from? How do they work? OCLC Systems & Services: International digital library perspectives.2008.
- 22. Choudhury M H, Wu J, Ingram W A, Fox E A. (2020, August). A heuristic baseline method for metadata extraction from scanned electronic theses and

dissertations. In: Proceedings of the ACM/IEEE Joint Conference on Digital Libraries. 2020. pp. 515-516.

- 23. Veve M. From Digital Commons to OCLC: a tailored approach for harvesting and transforming ETD metadata into high-quality records. Code 4 Lib Journal.2016; (33).
- 24. Choudhury M H, Jayanetti H R, Wu J, Ingram W A, Fox E A. (2021). Automatic metadata extraction incorporating visual features from scanned electronic theses and dissertations. In: ACM/IEEE Joint Conference on Digital Libraries (JCDL). IEEE; 2021. pp. 230-233.
- Zhao Y, Jiang A. (2004). Building a distributed heterogeneous CALIS-ETD digital library. In: International Conference on Asian Digital Libraries. Springer, Berlin, Heidelberg; 2021. pp. 155-164.. https://doi.org/10.1007/978-3-540-30544-6\_16.
- 26. Thompson S, Liu X, Duran A, Washington A. A case study of ETD metadata remediation at the University of Houston libraries. Library resources & technical services. 2019; 63(1).
- 27. Gonçalves M A, Fox E A, Watson L T, Kipp N A. Streams, structures, spaces, scenarios, societies (5s) A formal model for digital libraries. ACM transactions on information systems (TOIS).2004;22(2);270-312.
- 28. Yang L, Ketner K, Luker S, Patterson M. A complete system for publishing music-related ETDs: Technology development and publishing model. Library Hi Tech. 2016; 34 (1).
- 29. Banach MGHAN. The benefits of managing and publishing ETDs" in house" using an open access repository. USETDA 201. Available at: http://works.bepress.com/meghan\_banach/4/.
- 30. Potvin S, Thompson S. An analysis of evolving metadata influences, standards, and practices in electronic theses and dissertations. 2016. doi: http://hdl. handle. net/10657/1341.
- 31. Han MJK, Harrington P, Black A, Kudeki D. Aligning author-supplied keywords for ETDS with domain-specific controlled vocabularies. 2016.
- 32. Lamba M, Madhusudhan M. (2018). Metadata tagging of library and information science theses: Shodhganga (2013–2017). In: ETD 2018: Beyond the Boundaries of Rims and Oceans Globalizing Knowledge with ETDs, Taiwan; 2018.
- 33. Veve M. Harvesting ETD metadata from institutional repositories to OCLC: Approaches and barriers to implementation. Journal of Library Metadata.2016;16(2): 69-79.
- 34. Surratt B E, Hill D. ETD2MARC: A semiautomated workflow for cataloging electronic theses and dissertations. Library Collections, Acquisitions, and Technical Services. 2004;28(2): 205-223.



# **REDKART.NET**

(A product of Red Flower Publication (P) Limited) (Publications available for purchase: Journals, Books, Articles and Single issues) (Date range: 1967 to till date)

The Red Kart is an e-commerce and is a product of Red Flower Publication (P) Limited. It covers a broad range of journals, Books, Articles, Single issues (print & Online-PDF) in English and Hindi languages. All these publications are in stock for immediate shipping and online access in case of online.

# Benefits of shopping online are better than conventional way of buying.

- 1. Convenience.
- 2. Better prices.
- 3. More variety.
- 4. Fewer expenses.
- 5. No crowds.
- 6. Less compulsive shopping.
- 7. Buying old or unused items at lower prices.
- 8. Discreet purchases are easier.

URL: www.redkart.net

# Information Literacy Skills among PG Students and Researchers in Accessing the Resources

# Nayana J<sup>1</sup>, Padmavathi N<sup>2</sup>

#### How to cite this article:

Nayana J, Padmavathi N. Information Literacy Skills among PG students and Researchers in Accessing the Resources. Indian J Lib Inf Sci 2024; 18 (1):35–40.

#### Abstract

Information Literacy is essential for each individual to obtain the required Information from the vast availability of resources. With Information Literacy, one can identify, evaluate, apply and acknowledge the source of Information. Information Literate evolution plays a important function in the growth of the Nation. Significant steps need to be taken to transform the young Indians into Information literate Indians. The lifelong learning process should be an essential component of the Higher education system. The present study attempted to understand the level of understanding of information sources available in the university, recognize their level of digital Literacy, and find out their diverse search strategies.

**Keywords:** Information Literacy (IL); IL models; Information Communication Technology; Academic Library; e- Resources.

### INTRODUCTION

The impact of Information Communication Technology has been growing at every levels, from principal to superior and lasting education. ICT provides a novel perspective in expanding traditional processes and systems. ICT is becoming integral to learning strategies, providing additional elasticity in education and promoting interactivity

Authors Affiliation: Senior Library Cum Information Assistant, Centre for Nano & Soft Matter Sciences, Bengaluru, Karnataka 562162, India.

**Coressponding Author: Padmavathi N,** Assistant Librarian, Bangalore University Library, Bangalore University, Bengaluru, Karnataka 560009, India.

E-mail: padma.hpm@gmail.com

Received on: 30.12.2023

Accepted on: 17.02.2024

for learners' connectivity to people and education resources in various parts of the world. IL is another characteristic of new educational innovations and is principal in any teaching system(Mutume,Kuda). IL is essential, mainly in the current age, because it allows us to deal by knowing where to trace required Information successfully. In addition to that it provides the essential skills to use a new Library to access the Information. It enable us to assess and evaluate the acquire Information, providing us the confidence to make a better decisions. (ACRL, 2005).

Students cannot learn everything they need within the stipulated time in Universities. Information Literacy teaches them with necessary skills which enable them to grow to be independent constant learners. According to ALA's Committee says, "Ultimately, information literate people are those who have learned how to learn" (ACRL, 2005). Information Literarttee people identify how to locate the required Information for any task (Ojedokun, 2007). Information literacy aims to develop competencies to remain themselves efficient in their knowledge domains by utilizing appropriate and suitable Information morally and legally. Subsequently, they must be capable to apply this knowledge to their study, research and work. Through Information Literacy, contextualize and see things in a more significant manner.

# Information Literacy models:

The statement highlights a potential issue in the implementation of IL programs in educational libraries, particularly in advanced education. The concern raised is that some educational libraries may introduce IL programs without adequate planning. The lack of a structured course program, training for the trainers, and extension of the program to different educational levels could pose challenges to the effective integration of information literacy into the educational system. (Hemavathi & Ramesha)

IL models are like a road map in Information seeking process. It shows the proper direction in identifying, analyzing, and using the Information to complete tasks such as finding the Information to answer the questions, browsing for Literature search, or exploring new topics. It serves as a guideline for developing Information skills among the user society. some well known information literacy models that have been developed by researchers and educators globally through research and evaluation (Swapna & Biradar, 2017). Some of the information literacy models developed throughout the world is as follows:

- SCONUL Seven Pillars IL Model
- EMPOWERING-8 IL Model
- The Big 6 Information Process Model
- PLUS Model
- Kuhlthau's Information Search Process Model
- 8Ws IL Model
- DIALOGUE Model
- Pathways to Knowledge
- The Alberta Model
- Action Learning Model
- Super 3 Model
- Follett's Information Skills Model

# Need for Information Literacy in Academic Libraries:

Information literacy is the ability to understand the requirements of students, researchers and various professional workers and can identify, evaluate and use needed Information effectively.

- 1. Students and Library users can use the Principles of Scholarly communication for their study or research purposes and the problems of information searching and sharing resources.
- 2. Student and Library users acquire the ability to locate, select, and use appropriate Information, retrieval tools, and sources to find helpful Information in connection with studies or the information needs of the end-users whenever required.
- 3. A student would be confident in using and able to carry out Information searching.
- 4. Huge availability of Information in great quantity in various forms and formats.
- 5. Free flow of Information without any geographic boundaries through technologies.
- 6. Required Information can be identified in a vast amount of Information.
- 7. It is changing the nature of libraries and the education system.
- 8. Raise the number of users and their needs for Information.
- 9. Sources of Information are many, therefore, making its control difficult.
- 10. Information is available in different formats, which a user should be adept in handling to use the Information.
- 11. Research on complex and interdisciplinary topics.(Kumbhar)

Moreover, the information society aims to overcome the information gap in the community by the democratization of Information to empower the citizens.

# Objective:

- 1. To know the postgraduate students and research scholar's ability to recognize their Information for the study.
- 2. the awareness of PG students on the available information resources.
- 3. To identify the significant resources used
- 4. To determine the search strategy used
- 5. To know the purpose of using the e-resources
- 6. To know the awareness about plagiarism software and reference management tools

#### Review of related literature:

An information literacy program is essential for exploring available resources for various purposes. Many studies related to Information skills among PG students have been conducted. Some of the reviews are being updated here.

Munshi, Shamim Aktar & Nagar, and Priyanka (2015). Conducted a Study on Information Literacy Skills among PG students at Aligarh Muslim University. According to the study, the majority of the students are aware of the resources available in the Library. Books are the most effectively used resources compared to other resources. They use the resources mainly for Classroom presentations, course assignments, research papers, and examination purposes.

**Madhusudhan M (2012).** studies intensely agrees that Information Literacy programmes for their users is necessary at the beginning of the academic year. Most libraries conduct user studies while planning for the initiating Information Literacy programs. The Librarian provided basic search skills and didn't give much training on using CD/ROM databases, understanding citations, documenting research work, plagiarism, etc

**Saxena (2017).** evaluated digital Literacy in the Indian higher education sector. It also focuses on the evolution of digital education in India and the different opportunity available for students. The study reveals that smaller towns are interested in adopting digital technologies but cannot assume the technology due to a lack of good internet facilities.

**Shukla. R & Verma, Mj K (2020).** analyzed the Information and digital literacy skills among the Social Science students of Mizoram and Tezpur University. The study reveals that most university respondents are good at accessing, searching, evaluating and using Information. Through digital resources, both the University students are benefited that is by accessing the resources quickly. Most of the respondents from both Universities are familiar with the Anti-Plagiarism software Turnitin. Through study revealed that regular training session increases the efficiency of the students.

# METHODOLOGY

The study mainly focused on "Information Literacy skills among the PG students & Researchers at Bangalore University". A survey method used for the present study. There are two commonly used tools for collecting data in survey research, the Questionnaire method and the Interview method. Primarily questionnaire is used as a significant tool in this study. However, this has been complemented with informal interviews as and when required. The questionnaire were distributed to 200 PG students & 100 researchers, out of which only 260 respondents were responded.

# DATA ANALYSIS

The data collected from the respondents through questionnaires was analyzed using simple percentage technique.

Table 1: Distribution of the questionnaire

Questionnaire Distributed	Response received	Percentage
300	260	86.67

The table 1 shows that Distribution of questionnaire, this table discusses the respondents' general details based on the type of institutions. Total of 300 questionnaires were distributed, and out of that 260 responded to the questionnaire.

Table 2: Qualification of the respondents

Qualification of respondent	No. of responses received	٥/٥
PG students	185	71.16
Research Scholars	75	28.84
Total	260	100

Table 2 represents the educational qualification of the respondents. The study reveals that the majority of the respondents are PG students (71.16%) followed by Research Scholars (28.84%).

 Table 3: Level of Information Need

Level of Information needed	No. of respondents	0/0
Basic	60	23.07
Moderate	62	23.85
Advance	138	53.08

Table 3 represents the information requirement of the Users. Most of the users require advanced Information (53.08%) when compared to Basic (23.07%) and Moderate Information (23.85%).

Table 4: Purpose of using e-resources

Factors	Research Scholar N= 75	PG Students N= 185	Total N=260	0/0
For research purposes (thesis/dissertations/project work)	70	90	160	61.53
Updated knowledge in my interested area	48	104	152	58.46
For getting current Information	26	56	82	31.53
For writing and publishing articles/books	65	09	74	28.46
To prepare a research proposal	62	22	84	32.30
Ease of search and navigation	42	85	127	48.84
For Competitive examinations	35	92	127	48.84

The e-resources can be preserved in electronic format for the long term. E-resources can be easily shared and duplicated multiple times. The below table represents that major of the Research scholars and PG students uses e-resources for research purpose, followed by 58.46% uses to update knowledge in their interested area, 48.84% uses e-resources to ease the search and navigation, and competitive examination, 32.30% to prepare the research proposal, 31.53% uses for getting current Information, and 28.46% uses for writing and publishing articles and books.

Table 5: Identifying resources in the Library

Factors	Research scholar N= 75	PG Students N= 185	Total N=260	%
Identify the book from the OPAC/WEB OPAC	62	97	159	61.15
Locate the book from the bookshelf by classification number	57	49	106	40.76
Ask the library staff	25	46	71	27.30
Identify the book from the card catalogue	2	32	34	13.07
To take help from a friend	17	15	32	12.30
Discussion with teachers	5	29	34	13.07
Bibliographies	12	4	16	6.15
Citation in a journal article	8	7	15	5.76

Identifying the right resources is very difficult when the Information is available in vast volume. There ate many methods available for determining the resources. Table 5 represents the identifying the resources.

The majority of the research scholar and PG students use Web OPAC(61.15%) for searching the resources, followed by 40.76% uses book shelf by class number, 27.30% asking the library staff,13.07% identify the book through the card catalogue and discussion with teachers and only 5.76% uses citation in Journal article.

Table 6: Locating the latest Information about the Subject

Factors	Research scholar N= 75	PG Students N= 185	Total N=260	0/0
Journals	72	150	222	85.38
Newspaper	48	115	163	62.69
Patents	23	09	32	12.30
Dictionary	10	45	55	21.15
Encyclopedia	35	97	132	50.76

To enhance their knowledge about their research work, Research scholars and PG students refers Journals (85.38%) followed by Newspaper (62.69%), Encyclopedia (50.76%), Dictionary (21.15% and Patents (12.30%).

Table 7: WebOPAC/OPAC services

Search operating	Research scholar N= 75	PG Students N= 185	Total N=260	0/0
By Author	67	155	222	85.38
By Title	72	162	234	90
By keyword	56	103	159	61.15
By Subject	15	88	103	39.61
By Publisher	10	76	86	33.07
ISBN	45	135	180	69.23

Libraries are also among those fields that apply technologies to facilitate their customers. Online public access catalogue is a vital technology that libraries use to provide access to library users. Table 8 represents that about 85.38% of users search through Author, followed by 90% through a title, 69.23% ISBN, 61.15% by keyword, 39.61% subject and 33.07% by publishers.

Table 8: Search strategies for locating the Information

Search strategies	Research scholar N= 75	PG Students N= 185	Total N=260	0⁄0
Basic search	73	183	256	98.46
Advanced search	68	132	200	76.92
Boolean search techniques (and, or, not)	62	125	187	71.92
Expert search	5	-	5	1.92

Table 11: Problems faced in accessing Resources

Phrase search ("")	12	3	15	5.76
Wild card search/ truncation (*/?)	2	-	2	0.76

Search strategies are ways of using search terms to find required Information from search tools, such as search engines (Google), the library catalogue and online databases.

Table 9:Training requirements in retrieving onlineresources

Training requirement	Research scholar N= 75	PG Students N= 185	Total N=260	0/0
Yes	52	102	154	59.23
No	23	83	106	40.76

The training enhances knowledge and enables us to improve retrieval techniques. The above table shows that 59.23% of Researchers and PG students require more training and about 40.76% don't require any training in retrieving online resources.

Table:10 Awareness of the Plagiarism Software

Awareness	Research scholar N= 75	PG Students N= 185	Total N=260	%
Yes	75	25	100	38.46
No	0	160	160	61.53

Plagiarism tools are essential in Universities and R & D institutions. Plagiarism helps identify the similarity, paraphrasing, improper citation and matching in the reports submitted. The above table represents that only 38.46% of Research Scholars and PG students are aware of Plagiarism software.

Issues	Research scholar N= 75	PG Students N= 185	Total N=260	%
Lack of academic/ research related Information on my topic	65	25	90	34.61
Inadequate skills on how to use e-resources	50	98	148	56.92
Information irrelevance	45	53	98	37.69
Lack of awareness on literature search techniques	12	85	97	37.30
Lack of skilled library staff to assist	03	12	15	5.76
Lack of knowledge in the using the library catalogue	15	96	111	42.69
Lack of technical support	25	38	63	24.23

The online resources are essential for getting updated Information about the specific research topic. The online resources are easily

accessible without any restrictions. Some of the major problems faced in accessing the resources are 56.92% inadequate skills on how to use e-resources, followed by 42.69% Lack of knowledge in the using the library catalogue, 37.69% for Information irrelevance and lack of awareness on literature search, 34.61% Lack of academic/research related Information on my topic, 24.23% Lack of technical support and 5.76% lack of skilled library staff to assist.

# CONCLUSION

Information literacy is essential in any educational institution; users can get their required Information quickly. The present study revealed that Journals are accessed mainly by Research Scholars and PG students to get the latest Information about their areas of interest. Most of them use basic search when compared to advanced search. In this study, we found that Research scholars use primary search tools, plagiarism tools and e-resources to get the required Information.

## REFERENCES

- Baro, E,E. & Fyneman, B. (2009). Information literacy among undergraduate students in Niger Delta University. The Electronic Library, 27(4), 659-675.
- Hemavathi, B.N. & Ramesha, B. (2020). Information literacy (il) model for Indian higher

learning environment: a Practical approach to implementation of IL instruction program at university Libraries. Journal of Indian library association,56(4),146-149.

- 3. Kumbhar,K. N.(2014). Information Literacy for Academic Libraries. Interlink research analysis,6(10).
- Madhusudhan, M. (2012). Information literacy programmes in select university libraries in Delhi: a study, Journal of Indian Library Association, 2012, 48(4) pp. 5-19.
- Munshi, Shamim Aktar and Nagar, Priyanka. (2016). Information literacy skills among the postgraduate students at Aligarh Muslim University, India. Library Philosophy and Practice (e-journal). 1419.
- Mutume, Kuda. Introduction to Information Literacy Link: https://www.academia.edu/32935355/ Unit\_1\_Introduction\_to\_Information\_Literacy.
- 7. Ojedokun, A.A. (2007), Information Literacy for Tertiary Education Students in Africa.
- 8. Third World Information Services Limited, Ibadan.
- Shukla, R., Kumar, A. & Verma, M.K. (2020). Information and digital literacy skills among PG students of social sciences of Mizoram University and Tezpur University: A comparative study. International Journal of Information Dissemination and Technology, 10(1), 40-51.
- Swapna, G., & Biradar, B. S. (2017). Information Literacy Model for Higher Education Institutions in India. International Journal of Digital Library Services, 7(3), 31-50.



# Comprehending the Print Books and E-Books Preferences: Comparing the Contrasts

#### Mamta Rani<sup>1</sup>, Rishabh Kumar Jain<sup>2</sup>, Shiva Kanaujia Sukula<sup>3</sup>, Nageswara Rao Kondamudi<sup>4</sup>, Pragati<sup>5</sup>

#### How to cite this article:

Mamta Rani, Rishabh Kumar Jain, Shiva Kanaujia Sukula, Nageswara Rao Kondamudi, Pragati. Comprehending the Print Books and E-Books Preferences: Comparing the Contrasts. Indian J Lib Inf Sci 2024; 18 (1):41–50-

#### Abstract

The evolution of literature consumption has witnessed a paradigm shift between print books and e-books, shaping the reading landscape. This paper explores the coexistence and impact of both formats on readership habits and preferences. It scrutinizes the tangible allure of print books, emphasizing sensory experiences and nostalgic sentiments associated with physical copies. In contrast, the paper delves into the convenience and accessibility of e-books, analyzing the role of digital platforms in democratizing literature. The article intends to described and shed light on the ongoing discourse between traditional and digital reading.

Keywords: Print books, E-books, Education, Researcher, Jawaharlal Nehru University.

#### INTRODUCTION

In today's digital age, the choice between print books and e-books is a nuanced decision shaped by convenience, nostalgia, and technological advances. This analysis aims to compare the contrasting attributes of each format, from the tactile experience of print to the portability of e-books. By exploring factors like reading habits, psychological

E-mail: Nageswararao.kondamudi@gmail.com

Received on: 30.12.2023 Accepted on: 17.02.2024

impacts, and environmental considerations, we seek to understand the evolving preferences of readers across diverse demographics.

#### The contemporary status of print and e-books

The contemporary status of print and e-books suggests a coexistence marked by diverse reader preferences and technological advancements. Print books continue to maintain a steady presence, particularly for those who appreciate the tactile experience, collection aesthetics, and the nostalgic charm of physical libraries and bookstores. On the other hand, e-books have gained substantial popularity, offering readers the convenience of portable digital libraries, adjustable font sizes, and instant access to a vast array of titles (Jones & Brown, 2011) E-books have also become integral to educational settings, providing interactive features and search functionalities. The publishing industry has adapted to this dual landscape, with many titles released in print and digital formats. However, it's

Authors Affiliation: <sup>1,4</sup>Assistant Librarian, <sup>3</sup>Deputy Librarian, <sup>2,5</sup>Professional Assistant, Dr. B.R. Ambedkar Central Library, Jawaharlal Nehru University, New Delhi-110067, India.

**Coressponding Author: Nageswara Rao Kondamudi,** Assistant Librarian, Dr. B.R. Ambedkar Central Library, Jawaharlal Nehru University, New Delhi-110067, India.

essential to note that the balance between print and e-books may have evolved as influenced by technological developments, societal trends, and reader preferences. As observed in various studies and research works (Erin, 2010; Hanho 2012; OECD, 2012; Spjeldnæs & Karlsen, 2022), the role of digital devices is found to transform reading habits. Roles of technology integration with reading intentions are observed as an accepted behavior (Yu-Zhou; Yue-Ming; Yu-Yang; Chao, 2021).

#### Value of print books

Print books hold a unique and enduring value that transcends the digital age. Beyond their tangible presence, they carry a sense of nostalgia and tradition, embodying the centuries old practice of disseminating knowledge through the printed word (Piramanayagam & Seal, 2020). The tactile experience of flipping through pages, the distinctive scent of paper and ink, and the weight of a well bound book contribute to a sensory engagement that is irreplaceable. Print books also foster a connection to the past, as they often line the shelves of libraries and bookstores, creating a physical and visual testament to literary history. Moreover, print books encourage focused and immersive reading, free from the distractions of screens and notifications. As artifacts of culture and knowledge, print books not only provide information but also serve as cultural touchstones, preserving the written word in a tangible and cherished form.

## Offerings from print books

Print books offer a multitude of benefits that contribute to a rich and fulfilling reading experience. One of the primary advantages lies in the tactile engagement they provide, allowing readers to physically interact with the pages, and feeling the texture and weight of the book. This sensory connection enhances the overall enjoyment and immersion in the narrative. Print books also alleviate concerns related to screen time and digital eye strain, providing a respite from the pervasive use of electronic devices. Additionally, the permanence of print ensures that the content is not subject to technological obsolescence, offering a timeless quality that withstands the rapid changes in digital formats. Print books often become cherished possessions, creating a tangible and visible library that can be passed down through generations, fostering a love for literature and an appreciation for the enduring value of the written word.

# Wonderfull conforts from the milieu of print books

Print books come with several advantages that contribute to their enduring appeal. Firstly, the tactile nature of print books provides a unique sensory experience, allowing readers to feel the paper, turn physical pages, and appreciate the weight and texture of the book. (P & Sunder, 2016) This tangible interaction fosters a deeper connection with the content and enhances the overall reading pleasure. Print books also offer a break from the screen centric world, reducing eve strain and the potential negative effects associated with prolonged digital device use. Moreover, print books are free from the vulnerabilities of electronic formats, ensuring that they remain accessible even without power or technological devices. The durability and longevity of print materials make them a reliable and lasting source of information and entertainment. Lastly, print books contribute to the aesthetic appeal of bookshelves, creating a visually pleasing and culturally significant presence in homes, libraries, and book stores.

#### Print books possibilities and suitabilities

Print books remain an essential resource for researchers across various disciplines, offering a depth of information and a tangible, reliable source of knowledge. Despite the rise of digital platforms and online databases, many researchers continue to rely on print books for in-depth exploration and comprehensive literature reviews (Pandey & Sukula, 2019). Print books often provide a holistic view of a topic, offering historical context, nuanced perspectives, and a cohesive narrative that can be beneficial for a thorough understanding of a subject. Moreover, researchers appreciate the permanence and stability of print, as it eliminates concerns related to technological obsolescence and ensures consistent access to information over time. The act of physically engaging with print books, whether through annotations, bookmarks, or the tactile experience of flipping pages, facilitates a more immersive and focused reading experience for researchers as they delve into their academic inquiries.

## Print books and eBooks Usage

Print books and e-books each bring distinct advantages and considerations to the reading experience. Print books offer a tangible, sensory engagement that many readers find irreplaceable the feel of paper, the scent of ink, and the weight of the book contribute to a unique connection with the content. Additionally, print books don't require electronic devices, reducing eye strain and eliminating concerns about battery life. On the other hand, e-books offer unparalleled convenience with their portability, adjustable fonts, and the ability to carry an entire library in a single device. E-books often come with search functionalities and interactive features, enhancing the reading experience for some However, concerns related to screen time and potential technological obsolescence persist. The debate between print and e-books often boils down to personal preference, with some readers cherishing the traditional feel of print, while others embrace the digital evolution for its practicality and versatility. Ultimately, both formats coexist, offering readers a diverse range of choices to suit their preferences and needs.

The recent studies (Y. Zhang & Kudva, 2013; Kumbhar, 2018; Potnis, Deosthali, Zhu & Mc Cusker, 2018) have expressed the variations in the ebooks usage patterns, policies, and purchase preferences in context with print books. Multiple factors are responsible for ebook usage among various kinds of users. It is observed that interactive e-books (X. Zhang et al., 2021)) are popular among students.

According to studies, "e-book user experience (search and information seeking) from usage data and user tests" reflects (Walton; Zhang, Niu & Promann, 2017) the focus on specific pages, and specific information. Designing e-book features in the direction of supporting the users' reading strategies are significant aspect. There are certain advantages such as using smartphones as well as the availability of multilingual featured kinds of e-books have been instrumental in ebooks' multifarious demand. Based on industry reports and data from (https://www.dotmordorintelligence. com/industry-reports/e-book-market) the size of the e-book market is projected to reach USD 21.73 billion by 2029, from USD 17.20 billion in 2024. The main factors propelling the global e-book market are the advancements in technology and the sophistication of reading devices that offer an experience akin to that of reading a real book.

#### Purchase procedure of print books

The purchase process for print books typically involves a series of steps that cater to the preferences of individual readers. At Dr. B.R. Ambedkar Central Library, JNU The faculty members and students can suggest books and other publications for acquisition at the central library. Students, researchers, faculty members, and other library users regularly suggest books in the management library (Kumar & Gaur, 2019). They stay informed about current trends in literature, academic disciplines, and popular genres, ensuring that the collection reflects a broad spectrum of knowledge and interests. The list of books requested by the Faculty for purchase in each School/Centre should always be passed on to the respective Deans/ Chairpersons by the Faculty. The requisitions of students can be approved by the concerned faculty and Dean/Chairperson. The list of recommended books would be placed before the Library Advisory Committee for its review after checking for duplication. Some very urgent requirements of books forwarded by the Deans/Chairpersons of respective Schools/Centres may be purchased with the approval of the Library Advisory Committee or by circulation to LAC members. Regardless of the avenue chosen, the process of acquiring print books is a journey that allows readers to immerse themselves in the world of literature, from the initial discovery to the satisfaction of holding a physical book in their hands.

## **OBJECTIVES**

- To understand the print books Mechanism.
- To Find out the growth and development of the last five years of Print books.
- To Observe the comparison of the Print books purchased among various disciplines and different Centres.

# DATA ANALYSIS

Table 1 reveals that the majority of books i.e. 199 procured by the School of Engineering in the financial year 2018-19 and the least i.e. 1 in the financial year 2019-2020 and 2020-2021 by the School of Engineering and Special Centre for Nano-sciences. The table also shows that not any book procured by Special Centre for Molecular Medicine in the financial year 2021-21, 2021-22 and 2022-2023.

Table 2, It was observed that 652 maximum no. of books purchased by the Atal Bihari Vajpayee School of Management & Entrepreneurship in the financial year 2019-2020 and minimum no. of books procured in the financial year 2019-20 and 2021-22 by Special Centre for Disaster Research and Special Centre for the Study of North East India.

According to table 3, it was observed that SIS has procured the majority of books in the financial year

2020-2021 and the minimum no. of books in the financial year 2021-2022.

Table 4 indicates that 383 maximum no. of books purchased by the CIL in the financial year 2021-22 and the least books i.e. 2 by CAAS and CCSEAS in the financial year 2021-2022.

Table 5 reveals that the School of Social Sciences has procured the majority of books in the financial year 2022-2023 and the minimum no. of books in the financial year 2019-2020.

Table 6: Book procured for the SIS, SLL&CS, and SSS from the Financial Year 2018-19 to 2022-23

**Table 1:** Book procured for the Science Schools from the Financial Year 2018-19 to 2022-23

Name of the School/Centre	Total No. of Books 2018-19	Total No. of Books 2019-20	Total No. of Books 2020-21	Total No. of Books 2021-22	Total No. of Books 2022-23
School of Engineering	199	1	162	3	42
School of Biotechnology	10	6	0	18	20
Special Centre for Molecular Medicine	8	6	0	0	0
Special Centre for Nano-science	10	0	1	2	0
School of Computational and Integrative Sciences	9	5	0	44	28
School of Computer and Systems Sciences	18	139	3	0	0
School of Environmental Sciences	12	15	7	5	34
School of Life Sciences	10	0	15	0	4
School of Physical Sciences	52	18	0	90	18

Name of the Total No. of School/Centre Books 2018-19 Books 2019-20 Books 2020-21 Books 2021-22 Books 2022-23 Atal Bihari Vajpayee School of 652 354 20 NA 52 Management & Entrepreneurship School of E-Learning NA NA NA NA 8 School of Arts & Aesthetics 49 18 33 11 34 Special Centre for the Study of North East 17 1 28 14 12 India Special Centre for National Security Studies 00 0 3 8 5 Centre for the Study of Law and 12 8 00 0 8 Governance School of Sanskrit and Indic Studies 162 00 307 152 51 Special Centre for Disaster Research 6 1 3 3 15

Table 2: Book procured for the Special Centre/Schools from the Financial Year 2018-19 to 2022-23

Table 3: Book procured for the School of International Studies from the Financial Year 2018-19 to 2022-23

Name of the School/ Centre	Total No. of Books 2018-19	Total No. of Books 2019-20	Total No. of Books 2020-21	Total No. of Books 2021-22	Total No. of Books 2022-23
		School of interr	national Studies		
CAS	7	7	3	00	6
CEAS	6	8	3	00	27
CES	13	10	6	7	1
					m 11 .

#### Mamta Rani. Comprehending the Print Books and E-Books Preferences: Comparing the Contrasts

CIAS	5	3	13	00	8
CILS	5	1	2	00	00
CIPOD	18	8	00	1	1
CIPS	10	8	00	00	1
CITD	00	00	00	00	8
CCPPT	3	17	2	00	12
CSAS	3	7	7	00	1
CCULAS	8	3	22	00	00
CWAS	19	22	50	20	11
CRCAS	17	9	22	4	11
ESP/HRS	9	00	00	00	00
	123	103	130	32	87

Table 6 reveals that the School of International Studies procured maximum number of books in 2020-2021 i.e. 130 and in 2021-22 least number of book i.e. 32. School of Language, Literature & Culture Studies procured 715 books in the financial year 2022-23 and least number of books 64 in the financial year 2019-2020. School of Social Sciences procured maximum books in the financial year 2022-23 i.e. 399 and the least books procured in 2019-20 i.e. 194.

Fig. 1 indicates the maximum no. of books purchased in the financial year 2018-19 followed by the 2020-2021, 2019-2020 and 2021-2022.

Fig. 2 reveals the Maximum no. of books purchased in the financial year 2019-20 and least books purchased in the year 2022-23.

Table 4: Book	procured for the Scho	ol of Language, Li	iterature & Culture	Studies from the Finance	cial Year 2018-19 to 2022-23
	1	0 0 1			

Name of the School/Centre	Total No. of Books 2018-19	Total No. of Books 2019-20	Total No. of Books 2020-21	Total No. of Books 2021-22	Total No. of Books 2022-23					
School of Language, Literature & Culture Studies										
CAAS	358	12	35	2	342					
CCSEAS	9	6	2	2	6					
CENG	7	00	12	24	7					
CFFS	6	00	00	00	00					
CGS	00	00	00	21	20					
CIL	184	16	5	383	326					
CJS	00	00	00	00	00					
CKS	00	10	00	00	00					
CL	45	20	34	10	6					
CPCAS	3	00	26	00	8					
CRS	4	00	00	2	00					
CSPILAS	0	0	5	65	0					
GPLLAB	00	00	00	00	00					

Table 5: Book procured for the School of Social Science from the Financial Year 2018-19 to 2022-23

Name of the School/Centre	Total No. of Books 2018-19	Total No. of Books 2019-20	Total No. of Books 2020-21	Total No. of Books 2021-22	Total No. of Books 2022-23
School of Social Sci	ences				
CESP	18	4	54	33	55
CHS	103	44	108	41	39
CISLS	4	5	38	18	29
CMS	2	00	28	19	12
CPHL	30	7	4	1	46
CPS	43	27	24	31	54
CSDE/ CSSEIP	21	6	39	24	14
CSRD	40	29	34	36	42
CSSP	6	10	3	00	4
CSSS	7	30	9	19	33
CWS	5	3	1	00	00
GAE	1	6	00	00	00
CSMCH	9	12	14	00	26
ZHCES	20	11	37	19	45
Dr. BRACL	4	00	5	4	00
	313	194	398	227	399

Table 6: Book procured for the SIS, SLL&CS, and SSS from the Financial Year 2018-19 to 2022-23

Name of the School/Centre	Total No. of Books 2018-19	Total No. of Books 2019-20	Total No. of Books 2020-21	Total No. of Books 2021-22	Total No. of Books 2022-23
School of International Studies	123	103	130	32	87
School of Language, Literature & Culture Studies	616	64	119	509	715
School of Social Science	309	194	393	241	399



Fig. 1: Book procured for the Science Schools from the Financial Year 2018-19 to 2022-23

In Fig.3 it was observed that the maximum no. of books purchased by the School of International Studies in the financial year 2020-2021 followed by 2018-2019, 2019-20, 2022-23, and 2021-2022.

Fig. 4 indicates that the School of Language, Literature & Culture Studies procured the majority

of books in the financial year 2022-23 and the least in 2019-2020.

Fig. 5 shows the maximum no. of books procured in the financial year 2022-2023 and the minimum in the year 2019-2020.



Fig. 2: Book procured for the Special Centre/Schools from the Financial Year 2018-19 to 2022-23



# School of International Studies

Fig. 3: Book procured for the School of International Studies from the Financial Year 2018-19 to 2022-23

# FINDINGS

- The majority of books procured by the School of Engineering in the financial year 2018-2019 and the least books purchased by the Special Centre for Nano Science in the financial year 2021-22.
- The study found that among all the Special centres, the School of E-Learning procured the least no. of books.
- · Maximum No. of books procured by the School of Language, Literature & Culture Studies in the financial year 2022-23 followed by 2018-19,2021-22, 2020-2021, and 2019-2020.



# School of Language, Literature & **Culture Studies**

Fig. 4: Book procured for the School of Language, Literature & Culture Studies from the Financial Year 2018-19 to 2022-23



# School of Social Science

Fig. 5: Book procured for the School of Social Sciences from the Financial Year 2018-19 to 2022-23

• This study shows the maximum no. of books procured by the School of Social Sciences in the financial year 2022-2023 and the minimum no. of books in the year 2019-2020.

#### CONCLUSION

The collection development of print books is a strategic and dynamic process undertaken by libraries and bookstores to curate a diverse and relevant assortment of titles. Librarians and collection development specialists assess the needs and interests of their community or target audience, considering demographics, educational requirements, and cultural preferences. Budget constraints, available shelf space, and circulation data are also taken into account during the selection process. Acquisitions may involve purchasing newly released books, replacing wornout copies, or responding to specific requests from patrons. The goal is to create a well-rounded and inclusive collection that serves the community's informational, educational, and recreational needs. Regular evaluation and, if necessary, weeding out outdated or underutilized materials contribute to maintaining a vibrant and relevant print book collection over time.

#### REFERENCES

- Kumar, S., & Gaur, R. (2019). Collection development policies and management for books in management libraries. KIIT Journal of Library and Information Management, 6(1), 71. https://doi. org/10.5958/2455-8060.2019.00010.7
- Pandey, U. S., & Sukula, S. K. (2019). Preference of Electronic Over Print: A Case Study among Scientists and Research Scholars of IGIB, India. KIIT Journal of Library and Information Management, 6(1), 51. https://doi.org/10.5958/2455-8060.2019.00007.7
- 3. Piramanayagam, S. K., & Seal, P. P. (2020). The Choice between EBooks and Printed Books: A study among hospitality and tourism educators and learners. Library Philosophy and Practice, 2020. Retrieved from https://digitalcommons.unl.edu/cgi/viewcontent. cgi?article=7259&context=libphilprac
- P, Neelima., & Sunder, Ravi R. (2016). Comparison between e-books and printed material for effective understanding of subject by the medical and dental students. Indian Journal of Basic and Applied Medical Research, 5(4), 426–432.
- Tveit, Å. K., & Mangen, A. (2014). A joker in the class: Teenage readers' attitudes and preferences to reading on different devices. Library & Information

Science Research, 36(3-4), 179-184. https://doi. org/10.1016/j.lisr.2014.08.001

- Jones, T., & Brown, C. C. (2011). Reading Engagement: A Comparison between E-Books and Traditional Print Books in an Elementary Classroom. International Journal of Instruction, 4(2), 5–22. Retrieved from http://files.eric.ed.gov/ fulltext/ED522678.pdf
- 7. www.lib.jnu.ac.in
- Spjeldnæs, K., & Karlsen, F. (2022). How digital devices transform literary reading: The impact of e-books, audiobooks, and online life on reading habits. New Media & Society, 146144482211261. https://doi.org/10.1177/14614448221126168
- OECD (2012), "E-books: Developments and Policy Considerations", OECD Digital Economy Papers, No. 208, OECD Publishing, Paris, https://doi. org/10.1787/5k912zxg5svh-en.
- Luo, Y., Xiao, Y., Ma, Y., & Li, C. (2021). Discussion of students' e-book reading intention with the integration of the theory of planned Behavior and Technology acceptance model. Frontiers in Psychology, 12. https://doi.org/10.3389/ fpsyg.2021.752188
- Zhang, T., Niu, X., & Promann, M. (2017). Assessing the user experience of E-Books in academic libraries. College & Research Libraries, 78(5). https://doi. org/10.5860/crl.78.5.578
- 12. Walton, E. W. (2007). Faculty and Student Perceptions of Using E-Books in a Small Academic Institution. https://alair.ala.org/bitstream/ handle/11213/17007/walton\_facultyandstudentpe rceptionsofusinge-books.pdf?sequence=1
- https://crl.acrl.org/index.php/crl/article/ view/16713/18220
- Zhang, Y., & Kudva, S. (2013). Ebooks vs. print books: Readers' choices and preferences across contexts. Proceedings of the Association for Information Science and Technology, 50(1), 1–4. https://doi.org/10.1002/meet.14505001106
- 15. Jeong, H. (2012). A comparison of the influence of electronic books and paper books on reading comprehension, eye fatigue, and perception. The Electronic Library, 30(3), 390–408. https://doi. org/10.1108/02640471211241663
- Carreiro, E. (2010). Electronic Books: How Digital Devices and Supplementary New Technologies are Changing the Face of the Publishing Industry. Publishing Research Quarterly, 26(4), 219–235. https://doi.org/10.1007/s12109-010-9178-z
- Kumbhar, R. (2018). Trends in e-book research. DESIDOC Journal of Library & Information Technology, 38(3), 162. https://doi.org/10.14429/ djlit.38.3.12382
- Potnis, D., Deosthali, K., Zhu, X., & McCusker, R. (2018). Factors influencing undergraduate use of e-books: A mixed methods study. Library &

Indian Journal of Library and Information Science / Volume 18 Number 1 / January-April 2024

Information Science Research, 40(2), 106–117. https://doi.org/10.1016/j.lisr.2018.06.001

19. Zhang, X., Tlili, A., Shubeck, K. T., Hu, X., Huang, R., & Zhu, L. (2021). Teachers' adoption of an open and interactive e-book for teaching K-12 students Artificial Intelligence: a mixed methods inquiry.

Smart Learning Environments, 8(1). https://doi. org/10.1186/s40561-021-00176-5

20. Ebooks Market. Source: https://www. mordorintelligence.com/industry-reports/e-bookmarket



# REDKART.NET

(A product of Red Flower Publication (P) Limited) (Publications available for purchase: Journals, Books, Articles and Single issues) (Date range: 1967 to till date)

The Red Kart is an e-commerce and is a product of Red Flower Publication (P) Limited. It covers a broad range of journals, Books, Articles, Single issues (print & Online-PDF) in English and Hindi languages. All these publications are in stock for immediate shipping and online access in case of online.

# Benefits of shopping online are better than conventional way of buying.

- 1. Convenience.
- 2. Better prices.
- 3. More variety.
- 4. Fewer expenses.
- 5. No crowds.
- 6. Less compulsive shopping.
- 7. Buying old or unused items at lower prices.
- 8. Discreet purchases are easier.

URL: www.redkart.net

Red Flower Publication Pvt. Ltd.

# CAPTURE YOUR MARKET

For advertising in this journal

Please contact:

International print and online display advertising sales *Advertisement Manager* Phone: 91-11-79695648, Cell: +91-9821671871 E-mail: sales@rfppl.co.in

> Recruitment and Classified Advertising Advertisement Manager Phone: 91-11-79695648, Cell: +91-9821671871 E-mail: sales@rfppl.co.in

# Measuring and Analyzing Scholarly Literature Published on Diabetes Mellitus Type 1 with Special Reference to Bradford Law of Scattering and Leimkuhler Model: A Scientometric Study

Richa Arya<sup>1</sup>, Babita Jaiswal<sup>2</sup>, Garima Bisaria<sup>3</sup>

How to	cite th	is article:											
Richa	Arya,	Babita	Jaiswal,	Garin	na	Bisaria	a. Meas	uring	and	Analyzing	Schola	arly	Literature
Published	on	Diabetes	Mellitus	Туре	1	with	Special	Refer	ence	to Bradford	Law	of	Scattering
and Leimk	uhler N	Model: A S	cientometri	c Study	Ind	. J Lib. I	nf Sci. 202	4; 18 (1	):53–63				(

#### Abstract

The present paper deals with the applicability of Bradford's law of Scattering to the literature on Diabetes Mellitus type 1 disease. The PubMed database has been selected to collect data for the present study. A total of 489 journals published 1542 articles during the year 2012 to 2021 on Diabetes Mellitus type 1 disease. It was found that Current Diabetes Reports was the top core journal that published the highest number of articles (100) along with citation 4550. Bradford's law was tested for applicability using a ranked list of journals and publishing output. The Diabetes Mellitus type 1 literature's journal distribution pattern corresponded to Bradford's distribution pattern. The applicability of Leimkuhler's model was also tested and it is also fitted to the selected disease dataset of Diabetes Mellitus Type-1.

Keywords: Bradford's law of scattering, Leimkuhler model, Diabetes Mellitus Type-1, Bradford's multiplier, Bradford's bibliograph.

## INTRODUCTION

Scientific knowledge is disseminated through a Svariety of publications, including periodicals, journals, theses, etc. To keep researchers up to date, journals forecast and identify new concepts, approaches, methodologies, growth, and advancements in the field. In various academic fields, researchers consistently gravitate towards certain

Authors Affiliation: Junior Research Fellowship, Department of Library & Information Science, University of Lucknow, Lucknow 226007, India.

**Coressponding Author: Richa Arya,** Junior Research Fellowship, Department of Library & Information Science, University of Lucknow, Lucknow 226007, India.

E-mail: richaarya095@gmail.com

**Received on:** 25.05.2023 **Accepted on:** 30.06.2023

journals due to the strong alignment between the journal's subject matter and the focus of their research endeavors. These highly referenced publications are referred to as the "core journals" for the specific field. The notion of core journals stems from Bradford's Law of Scattering, originally formulated by Samuel Clement Bradford in 1934. In 1948, Bradford consolidated his findings regarding the growing dispersion of relevant journal articles within a particular subject by establishing a relationship between the number of journals in the highly productive nucleus and the number of journals in subsequent less productive zones, each containing an equal number of papers.

# Diabetes Mellitus Type 1

The present study focuses on the literature published on Diabetes Mellitus Type 1, the most

common disease. Type 1 diabetes mellitus (T1DM) is an autoimmune condition characterized by the immune system attacking and destroying insulinproducing beta cells in the pancreas. Insulin, a crucial anabolic hormone, plays a pivotal role in regulating glucose, lipid, protein, mineral metabolism, and growth. Its key functions include facilitating glucose entry into muscle and adipose cells, promoting liver glucose storage as glycogen and synthesizing fatty acids, enhancing amino acid uptake, limiting fat breakdown in adipose tissue, and encouraging potassium uptake into cells. Individuals diagnosed with type 1 diabetes mellitus necessitate lifelong insulin replacement therapy.<sup>1</sup>

# **Review of Literature**

Alves<sup>2</sup> analyzed the published literature on the Capital structure during the year 2014-2019 through the use of the Bradford Law. The Web of Science database was chosen for the collection of data in the study. The study's key finding was that 2017 marked the year with the most scholarly output on the topic (1,765 articles). The analysis revealed two authors who significantly distinguished themselves as the most prolific contributors within the thematic area. Across three distinct zones, the study identified a total of 134, 531, and 2,163 journals focusing on 2,387, 2,262, and 2,651 articles, respectively. According to the findings of the study, the other periodicals are regarded as "Noise" since they have merely released two or one article.

Sarkar<sup>3</sup> Borgohain, Verma, Nazim and investigated the application of Bradford's law and the Leimkuhler model in analyzing the Information Science literature, utilizing a dataset comprising 213 source items listed in the Scopus database over the study period spanning from 2001 to 2020. In the initial phase, a verbal formulation was employed to depict the journal distribution pattern, revealing a notable discrepancy from Bradford's distribution with a considerably high percentage of error in the actual observations. Following this, the Leimkuhler model was applied, with the determination of the Bradford multiplier (k) value. This application resulted in a minor percentage error of 0.0092357%. Subsequently, the data was graphically represented using Bradford's Bibliograph, offering a visual perspective. The most frequently cited journals in this study were Scientometrics (39 citations), Bulletin of the Medical Library Association (33 citations), and the Canadian Journal of Information and Library Science

Chaturbhuj and Sadik Batcha<sup>7</sup> explored the application of Bradford's law of scattering within the domain of fluid mechanics. The typical verbal formulation of 1: n: n2 was found to not align with the data in the context of fluid mechanics. The validation of Bradford's law was conducted using the Leimkuhler model, revealing a high level of accuracy up to 0.005% through a geometric series of 2:57:1462. In addition to applying Bradford's law, the research incorporated various Scientometrics indicators such as DCI (Density of Citation Index), ICI (Impact Contribution Index), author's ranking, and the ranking of the most preferred journals. These indicators were utilized for both qualitative and quantitative analyses of research output in the field of Fluid Mechanics. Furthermore, the study identified T.E. Tenduyar as the most prolific author in this domain. Moreover, it highlighted 'Chemical Engineering Science' as the highly preferred journal within the field of Fluid Mechanics. The research also sheds light on international collaboration trends among 13 highly contributing countries."

Chung<sup>8</sup> The research delved into an analysis of source documents and their references within the realm of classification systems research globally. Focusing on the period from 1981 to 1990, the study identified the core journals in this field. The results affirmed Bradford's law and the study pinpointed Catalogable & Classification Quarterly (CCQ) as the most productive journal, while Libral Resplices & Technical Services (LRTS) emerged as the most frequently cited journal in the field. Additionally, Knowledge Organization (KO), previously known as International Classification (IC), was recognized as the second most productive and frequently cited journal in this domain. The study emphasized that acquiring high-ranked international journals, as identified over the years, is a strategic approach to achieving extensive coverage of the field at an optimal cost.

**Gautam and Verma**<sup>10</sup> applied Bradford's Law of Scattering on LISA for the period of 14 years from 2001-2014. The study covered 11176 articles on Information Technology. The study found that Computer Communication journal occupied top place with 871 citations however Computer Network and Information Today were also the most cited journals with 802, and 267 citations respectively. The study revealed that a significant majority of studies on Information Technology were published in the English language, accounting for 84.04% of the publications. In terms of countrywise distribution, the highest proportion of these publications originated from the UK, constituting 38.4% with a total of 251 publications. Surprisingly, India secured the ninth position in terms of the number of publications related to information technology.

Gayan and Singh<sup>11</sup> conducted a study on Chemistry theses submitted to the Central Library Tripura University. Only theses submitted to the Indian ETD initiative Shodhganga was taken into account in the study. The study covered 20 theses consisting of 6214 citations from 2007 to 2016. Bradford's law was applied to determine the key journals in the field of chemistry. Phytochemistry was the most cited journal found during the study. The dataset in the study did not adhere to Bradford's law, but interestingly, it did align with Leimkuhler's model. The study also revealed a significant finding regarding the half-life of chemistry journals, which was determined to be 12.6 years The findings of the study will help researchers in the discipline of chemistry gain a better grasp of the peculiarities of their subject they will also assist librarians in their decision-making about document selection and collection building for their libraries.

Gourikeremath, Hiremath, Kumbar, and Hadagali<sup>12</sup> investigated Bradford's law of Scattering over Microbiology research in India from 2002 to 2016. A total of 25,744 papers published in total 328 journals were retrieved from the WoS database. The Bio-resource Technology Journal was found as the most productive journal with 1,610 (6.25%) of the papers, followed by Applied Biochemistry and Biotechnology with 1,019 (3.95%) and 746 (2.89%) articles. Theoretical aspects of Bradford's Law of Scattering were examined, and it was determined that the data did not conform to the present sample. Subsequently, the Leimkuhler model was employed, and it was successfully applied to the dataset, yielding a Bradford Multiplier (k) value of 14.17. Furthermore, the validation of Bradford's law was carried out through graphical formulation, and it confirmed all three characteristic features.

and Baskaran<sup>13</sup> Karuilancheran applied Bradford's approach to analyze research on diabetes and related diseases in India, utilizing data from the PubMed database. The analysis specifically focused on journal articles published in this domain from 1995 to 2013. The noteworthy findings of the study showcased that the Indian researchers made a substantial contribution, generating a total of 8,156 publications within the span of 19 years in the field of diabetes and allied diseases. Journal articles predominate among the different types of publications when compared to other types of publications. The core zone contained 31 journals

in total, with 1/3 of the articles published. Journal of Association of Physicians of India and Indian Journal of Endocrinology Metabolism, the first two Indian journals, each published 697 articles or 9.73 percent of all articles published. The literature on diabetes and allied diseases does not support Bradford's law.

Senthil Kumar<sup>14</sup> Kumar and examined Bradford's Scattering law on 18,877 research papers written by Indian scientists in the field of Astronomy and Astrophysics from 1988 to 2017. The bibliographic data were retrieved from the WoS database and analyzed separately for different blocks of 10 years and for 30 years consolidated, and the core journals were identified in Astronomy and Astrophysics. The Bradford's law of scattering and Leimkuhler Model were applied for testing the validity of the collected data and failed to establish consistency in the scattering of literature due to the high-level concentration of articles in very few journals.

Nash Stewart, Kruesi, and Del Mar<sup>17</sup> evaluated the applicability of Bradford's law for Cochrane Review of Cochrane Library-recognized works on "Acute Otitis Media" (AOM) and "Pneumonia," using the extraction and grouping of randomized controlled trials approach (RCTs). The study, while basically reflecting Bradford's law, was not very successful in forecasting the amount of literature on a given topic from RCTs. The study found that Zone 3 size varied from what the traditional Bradford model predicted may be due to the highly interdisciplinary nature of acute respiratory infections, which span the fields of primary care, pediatrics, and infectious diseases in addition to general internal medicine, or it may be due to classification issues with the "subject. he study's observation of a significant share of high-quality Randomized Controlled Trials (RCTs) originating from the extensive Zone 3 in journals underscores the established perspective that thoroughly exploring the tail end of the distribution is essential for encompassing pertinent literature

**Qio, Zhao, Yang, and Dong**<sup>18</sup> explored the background, genesis, developmental issues, and applications of Bradford's law. In this respect, they have also interpreted the inferences made by B.C. Vickery, F.F. Leimkuhler, B.C. Brooks, and. H.A. Cmojibcob in the law, which has resulted in the manifestation of a common understanding of its fundamental ideas and changing trends. The study also sheds insight on Bradford's legal application requirements, central regions, and restrictions.

**Ramakrishna, Dhanamjayab, and Talawar<sup>19</sup>** used the Web of Science database to test Bradford's Law of Scattering for Indian Dental Science publications from 1999 to 2018. The study found that total 5865 articles were scattered in 144 journals during the study period and highlighted most productive journal is Oral Oncology with 463 articles followed by the Journal of Moral Surgery with 386 articles. In this study, Bradford's law of scattering was tested and found not to fit for the present data set. Subsequently, an additional examination of the Leimkuhler model was conducted, revealing an exceptionally low percentage of error. The resulting Bradford Multiplier (k) was calculated at 9.37.

**Revathi and Ranganathan**<sup>20</sup> analyzed the growth of neurochemistry publications and the journalwise distribution of these publications from 1989 to 2020. Specifically, the study applied the Bradford distribution law and the Leimkuhler model to understand the publication patterns. The study involved 3,232 research publications scattered across 983 journals. The analysis identified the Journal of Neurochemistry as the most productive journal in the field of neurochemistry during the specified timeframe. However, the verification of the Bradford law and Leimkuhler model did not fit the observed publication data.

Sanaur<sup>21</sup> tested the applicability of Bradford's law for the scattering of publications in economics from India and China. The study analyzed data from 887 journals publishing 1,924 economics publications from India and 1,627 journals publishing 4,427 Chinese economics publications. The study found that the journal distribution pattern of the economics literature in both India and China fits Bradford's distribution pattern. Additionally, Egghe's model was found to be valid for both datasets. The data also revealed that the majority of the economics research publications in both countries are dispersed across various journals of a multidisciplinary nature, primarily in social sciences and agricultural sciences. Consequently, the study concluded that economics publications from both India and China are not highly concentrated in core or nucleus journals within the field of economics.

**Singh and Bebi**<sup>22</sup> analyzed 260 Ph.D. theses submitted during 1995-2008, encompassing a total of 9,997 references scattered across 934 journals. The study identified that the journal "Economic & Political Weekly" was the most cited journal, comprising 22.8% of the citations, followed by "The Punjab Past and Present" with 1.80% of the citations. Furthermore, the study found that Bradford's law of scattering was applicable to the distribution of citations in the present study.

Sudhier<sup>23</sup> reviewed the scholarly contribution of various facets of Bradford's Law, specifically focusing on the five-year data from journals (2004-2008) cited by physicists at the Indian Institute of Science (IISc), Bengaluru. The goal was to examine the applicability of Bradford's Law of Scattering in this context. The study encompassed 690 periodicals, containing 11,319 references gathered from 79 doctoral theses. From the analysis, it was determined that the most preferred journals among physicists at IISc were Physical Review-B with 9.53% citations, Physical Review-A with 7.69%, and Astrophysical Journal with 5.47% citations. However, the study concluded that the journal distribution pattern observed in the IISc doctoral thesis did not fit Bradford's distribution pattern.

Wahid and Idrees<sup>25</sup> applied the accepted formulations of Bradford's Law on 251 articles published in the Pakistan Journal of Psychological Research from 1986 to 2012. The study analyzed 6,890 citations used by the authors and formed a ranked list of cited journals using Egghe's formulation of Bradford's Law of Scattering. The key finding that journals were the most frequently cited sources is important, as it indicates the significance of scholarly journals as primary sources of information and research in the field being studied. The majority of the mentioned journals were US-based publications. Self-citations by authors and journals were extremely rare. The most often cited journal among those on a ranked list was determined to be the Journal of Applied Psychology.<sup>24</sup> major journals were found in the study when Bradford's Law was used. The only journal from Pakistan to be included in the list of essential journals is the Pakistan Journal of Psychology Research. This law was found to be appropriate for the selected Journal's citations.

**Wardikar and Gudadhe**<sup>26</sup> delved into assessing the relevance of Bradford's Law of Scattering by examining the data derived from journals cited by Ph.D. research scholars at universities in Maharashtra for their doctoral research. The dataset encompassed 798 periodicals, comprising a total of 5,467 references collated from 138 theses over the period of 1982 to 2010. In terms of journal preference, Annals of Library Science and Documentation emerged as the most cited journal, securing the top spot with a total of 207 citations. Following closely were College and Research Libraries with 184 citations and Herold of Library Science with 160 citations, signifying the notable preference for these journals among the research scholars. The study also shed light on the distribution of citations across different journal categories. Notably, each journal category represented approximately one-third of the total journals, illustrating a proportional distribution in a 15:55:728 ratio. These categories collectively covered a significant volume of citations, amounting to 1,844, 1,829, and 1,794 citations, respectively.

#### **Objectives of the Study**

The primary aim of this study is to apply Bradford's Law of Scattering and the Leimkuhler Model to analyze the literature within the domain of Type 1 Diabetes Mellitus. The secondary objectives of the study can be stated as follows:

- i. To prepare the ranked list of core journals.
- ii. To find out number of articles published in related journals.
- iii. To find out total number of citations.

# Methodology

The data for the present study has been collected from the PubMed database, maintained by the United States National Library of Medicine (https://pubmed.ncbi.nlm.nih.gov/). It is found that total 489 journals produced 1542 articles from the year 2012-2021 and these 489 journals have been

Table 1: Top 50 Journals published in the field of Diabetes Type 1

analyzed to test the applicability of Bradford Law. The study covers only Review articles published over 10 years.

5.1 Search strategy: The search approach utilized to compile data regarding Type 1 Diabetes Mellitus is described below:

Search: diabetes mellitus type 1 Filters: Free full text, Review, in the last 10 years, English, MEDLINE

"diabetes mellitus, type-1" (MeSH Terms) or "type 1 diabetes mellitus" (All Fields) or "diabetes mellitus type 1" (All Fields) and [y\_10(Filter)] and [freefultext(Filter)] and [review(Filter)] and [medline(Filter)] and [English(Filter)].

#### **Data Analysis and Interpretation**

Core journal studies typically assist in the selection of journals within a specific subject field. In Table 1, journals are organized in descending order based on the frequency of articles, and the table includes the number of citations attributed to articles published in each respective journal. The ranking of journals is determined by their contributions in terms of articles, following a quantitative criterion. The journal with the highest number of contributed articles is ranked as number 1, followed by the second highest at rank 2, and so forth. It's important to emphasize that the ranking of journals is solely based on quantitative criteria and does not incorporate qualitative assessments.

Journal	Number of articles	Cumulative Number of Articles	Number of Citations	Cumulative Number of citations
Current Diabetes Reports	100 (6.49 %)	100	4550 (4.98%)	4550
International Journal of Molecular Sciences	61 (3.96%)	161	1545 (1.69%)	6095
Journal of Diabetes Science and Technology	54 (3.50%)	215	2467 (2.70%)	8562
Diabetologia	53 (3.44%)	268	4511 (4.94%)	13073
Frontier in Immunology	46 (2.98%)	314	442 (0.48%)	13515
Frontiers in Endocrinology	42 (2.72%)	356	303 (0.33%)	13818
Nutrients	34 (2.20%)	390	2328 (2.55%)	16146
Journal of Diabetes Research	27 (1.75%)	417	1047 (1.15%)	17193
Current Opinion in Endocrinology Diabetes & Obesity	25 (1.62%)	442	457 (0.50%)	17650
Diabetes	24 (1.56%)	466	2229 (2.44%)	21795
Diabetic Medicine	24 (1.56%)	490	1916 (2.10%)	21795
Cochrane Database of Systematic Reviews	22 (1.43%)	512	3287 (3.60%)	25082
Pediatric Diabetes	21 (1.36%)	533	1405 (1.54%)	26487
Diabetes Obesity & Metabolism	21 (1.36%)	554	1286 (1.41%)	27773

Table Cont...

Richa Arya. Measuring and analyzing scholarly literature published on Diabetes Mellitus Type 1 with special reference to Bradford Law of Scattering and Leimkuhler model: a scientometrics study

Clinical and Experimental Immunology	17 (1.10%)	571	1056 (1.16%)	28829
Diabetes Technology & Therapeutics	17 (1.10%)	588	1040 (1.14%)	29869
Pediatric Endocrinology, Diabetes & Metabolism	17 (1.10%)	605	127 (0.14%)	29996
PLoS One	16 (1.04%)	621	1351 (1.48%)	31347
Current Diabetes Reviews	12 (0.78%)	633	1411 (1.54%)	32758
Molecular Metabolism	12 (0.78%)	645	576 (0.63%)	33334
Drug Design, Development and Therapy	12 (0.78%)	657	260 (0.28%)	33594
Nature Reviews Endocrinology	11 (0.71%)	668	2568 (2.81%)	36162
BioMed Research International	11 (0.71%)	679	748 (0.08%)	36910
Cells	11 (0.71%)	690	242 (0.26%)	37152
International Journal of Environmental Research & Public Health	11 (0.71%)	701	50 (0.05%)	37202
Cold Spring Harber Perspective in Medicine	10 (0.65%)	711	1278 (1.39%)	38480
Annals of the NewYork Academy of Sciences	9 (0.58%)	720	1034 (1.13%)	39514
Diabetes Metabolism/Research & Reviews	9 (0.58%)	729	666 (0.73%)	40180
CurrentOsteoporosis Reports	9 (0.58%)	738	649 (0.71%)	40829
Endocrinology & Metabolism Clinics of North America	9 (0.58%)	747	614 (0.67%)	41443
Journal of Diabetes Investigation	9 (0.58%)	756	510 (0.56%)	41953
Journal of Autoimmunity	9 (0.58%)	765	470 (0.51%)	42423
Clinical Immunology	8 (0.52%)	773	348 (0.38%)	42771
The Journal of Clinical Investigation	8 (0.52%)	781	316 (0.34%)	43087
The Review of Diabetic Studies	8 (0.52%)	789	308 (0.33%)	43395
Discovery Medicine	8 (0.52%)	797	291 (0.32%)	43686
Current Opinion in Immunology	8 (0.52%)	805	198 (0.22%)	43884
Cardiovascular Diabetology	7 (0.45%)	812	489 (0.54%)	44373
World Journal of Gastroenterology	7 (0.45%)	819	435 (0.48%)	44808
Diabetes Research & Clinical Practice	7 (0.45%)	826	397 (0.43%)	45205
BMJ Open	7 (0.45%)	833	378 (0.41%)	45583
Stem Cells Translational Medicine	7 (0.45%)	840	367 (0.40%)	45950
Endocrine Reviews	6 (0.39%)	846	992 (1.09%)	46942
Arteriosclerosis, Thrombosis, and Vascular Biology	6 (0.39%)	852	545 (0.59%)	47487
Islets	6 (0.39%)	858	357 (0.39%)	47844
Sensors (Basel)	6 (0.39%)	864	235 (0.26%)	48079
Biomolecules	6 (0.39%)	870	119 (0.13%)	48198
Biomedicine & Pharmacotherapy	6 (0.39%)	876	105 (0.11%)	48303
BMJ Open Diabetes Research & Care	6 (0.39%)	882	72 (0.08%)	48375
Internal Medicine	6 (0.39%)	888	60 (0.07%)	48435
Other Journals	654 (42.41%)	1542	42958 (47.0%)	91393

Table 1 depicts overall rank of the top 50 journals. After analysis of the scattering of total of 1542 articles in 489 journals it is found that Current Diabetes Reports is a top-ranked journal that contributes the highest number of articles (6.49%) as well as the highest number of citations (4.98%) followed by the second- ranked journal International Journal of Molecular Sciences with 3.96% of articles. Journal of Diabetes Science and Technology got 3rd rank with 3.50% of the total

articles. It is clear from the table that among 489 journals,12 journals are core journals that contribute 33.20% of the total article.

#### Application of Bradford Law of Scattering

The British mathematician and librarian, Samuel C. Bradford (1878-1948) is recognized for formulating the law regarding the distribution of publications within a subject, often referred to as the law of bibliographic scattering. This principle elucidates how literature related to a specific subject is dispersed and distributed across various journals. Bradford's Law posits that "if scientific journals are arranged in order of decreasing productivity of articles on a given subject, they may be divided into a nucleus of periodicals more particularly devoted to the subject and several groups or zones containing the same number of articles as the nucleus."

Bradford further elucidated that these succeeding zones follow a ratio of 1: n: n2,

where n is a multiplier. The term "nucleus" was coined by Bradford to represent the first zone of periodicals predominantly focused on the given subject. Subsequently, the remaining papers on the subject are distributed across other journals based on the defined ratio. This framework provides a quantitative understanding of how scientific literature is distributed, allowing for the identification of key journals at the core of a subject and a subsequent dispersion of articles in peripheral journals.<sup>1</sup>

Rank	Number of Journal	Cumulative Number of Journal	Log Cumulative number of Journal	Number of articles	Total Number of Articles	Cumulative Number of Articles
1	1	1	0	100	100	100
2	1	2	0.69	61	61	161
3	1	3	1.09	54	54	215
4	1	4	1.38	53	53	268
5	1	5	1.61	46	46	314
6	1	6	1.79	42	42	356
7	1	7	1.94	34	34	390
8	1	8	2.08	37	37	417
9	1	9	2.19	25	25	442
10	2	11	2.4	24	24	490
11	1	12	2.48	22	22	512
12	2	14	2.64	21	42	554
13	3	17	2.83	17	51	605
14	1	18	2.89	16	16	621
15	3	21	3.04	12	36	657
16	4	25	3.21	11	44	701
17	1	26	3.26	10	10	711
18	6	32	3.47	9	54	765
19	5	37	3.61	8	40	805
20	5	42	3.74	7	35	840
21	8	50	3.91	6	48	888
22	5	55	4	5	25	913
23	17	72	4.28	4	68	981
24	36	108	4.68	3	108	1089
25	72	180	5.19	2	144	1233
26	309	489	-	1	309	1542
Total	489	-	-	-	1542	-

Table 2: Distribution of Journal

#### Verbal Formulation of Bradford's Law

Table 2 provides comprehensive information about highly productive journals. The data in the table is organized based on rank, the number of journals, cumulative number of journals, logarithm of cumulative number of journals, number of articles, and cumulative total of articles. The arrangement of journals in the table follows a descending order based on article productivity, thereby facilitating the assessment and verification of Bradford's law in verbal terms.

In order to test the Bradford Law of Scattering, the 489 journals were arranged according to the

Table 3: Bradford's Zones and Number of Articles

decreasing order of articles produced by them. Then, all the journals are divided into three zones, each zone is designed to contain approximately the same number of articles.

Zone	Journal Observed	Percentage of Journals	Articles	Cumulative articles	Bradford Multiplier
1	12	2.46	512	512	-
2	75	15.40	514	1026	6.25
3	400	82.14	514	1540	5.33
	487	100	1540		5.79 (Mean Value)

Table 3 outlines the distribution of journals and the corresponding number of articles in the three zones, incorporating the value of Bradford's multiplier. It is found that 12 journals of the nucleus zone produced 512 articles which are 1/3rd of the total articles, the first zone of 75 journals covered 514 articles which contained another 1/3rd article of the total articles and the Second zone with 400 journal produced 514 articles covering remaining 1/3rd articles.



Fig. 1: Bradford Bibliograph

According to Bradford, the relationship between the zones is 1: n:  $n^2$ , if the values put in this ratio, then Bradford ratio is = 12:12\*6:12\*6\* = 12:72:432

while the relationship of each zone in the present study is = 12:75:400

Bradford's multiplier was arrived at by dividing the number of journal titles of a zone by its preceding zone.

$$= (75/12) + (400/75)/2 = 6.25+5.33/2 = 11.58/2$$
  
= 5.79

Thus  $1:n:n^2 = 12: 12*5.79: 12* (5.79)^2 = 12:69.48:402.29$ 

On the basis of the mean value of the Bradford multiplier derived from table 3, The percentage of error was calculated as

$$(12+ (12*5.79) + 12*(5.79)^{2} - (12+75+400))$$
  
= (12+69.48+402.29) - (487)  
Percentage of error=  $\frac{483.77-487}{487}*100 = -0.66$ 

Here, the percentage of error is negative so Bradford's law of scattering applies to the given dataset of Diabetes Mellitus Type-1. Bradford provided a graphical representation of his law, often referred to as the "Bradford distribution" or "Bradford curve. Mathematical Models were later suggested later by Vickery (1948)<sup>24</sup>, Leimkuhler (1967), Brookes (1969)<sup>6</sup> and Egghe (1990). Leimkuhler<sup>16</sup> developed a model based on Bradford's verbal formulation.

$$R(r) = a \log (1+br)$$
 (1)  
 $r = 1,2,3.....$ 

While explaining Leimukhler's law, Egghe shows that

$$a = Y0 / log k$$
 (2)  
 $b = k - 1 / r0.$  (3)

where  $r^0$  = the number of articles in the first Bradford zone,

Y0 = the number of articles in all Bradford zones (all these zones of item being of equal sizes), and

k = the Bradford multiplier

R(r) = is the cumulative number of articles produced by the journals of rank 1,2,3...r a and b are constants appearing in the law of Leimkuhler.

It is demonstrated in the formation of Bradford groups that the number of groups p is a parameter that can be freely chosen. Egghe (1990)<sup>9</sup> demonstrated the mathematical technique for computing the Bradford Multiplier k as

 $k = (e^{y*}ym)^{1/p}$  (4)

Where  $e^y$  is Euler's number ( $e^2=1.781$ )

If the sources are ranked in decreasing order of productivity, then ym is the number of articles in the most productive journals. Then y0 and r0 as follows

$Y_0 = y_m^2 \log k$	)
$R_0 = (k-1) y_m$ (6)	5)

Once p is chosen, the value of k can be calculated by using

$$k = (1.781 y_m)^{1/p}$$
 and  $Y_0 = A/P$  (7)

where A denotes the total number of articles.

Let T denote the total number of journals in the Bradford group, there are r0 k(i-1) sources (i= 1,2,3,p)

$$T = r_0 + r_0 k + r_0 k^2 + \dots + r_0 k^{(p-2)} \dots (8)$$
  
So,  $r_0 = T/1 + k + k^2 + \dots + k^{(p-1)} = T(k-1)/(k^p-1)$   
(9)

Since A and T are known from the data set, r0 and Y0 are calculated, once p is calculated by the formula (7).

## Application of Leimkuhler (1967)'s Model

Though the dataset fits into Bradford's model, Leimkuhler's Model<sup>22</sup> is employed for the verification of Bradford's law of scattering. For the application of Bradford's law, three zones were selected, p=3, then the value of k can be calculated using the formula 4,

$$k = (1.781 * Y_m)^{1/p}$$

$$= (1.781 * 4550)^{1/3} = 20.08$$

$$Y_0 = A/P = 1540/3 = 513.33$$

$$r_0 = T(k-1)/(k^{p}-1) = 487 (20.08 - 1)/(20.08^{3}-1) = 1.14$$

$$r_1 = r_0 * k = 1.14 * 20.08 = 22.89$$

$$r_2 = r_0 * k^2$$

$$= 1.14 * (20.08)^2$$

$$= 459.65$$

$$a = Y_0 / \log k = 513.33 / \log 20.08 = 3.94.03$$

$$b = k - 1/r_0 = 20.08 - 1/1.14 = 16.73$$

The number of Journals in the nucleus is found to be 1.14 1.14:1.14\*20.08:1.14\*20.08\*20.08

1.14:22.89:459.65=1.14+22.89+459.65=483.68Percentage of error =  $\frac{483.68-487}{487} * 100 = -0.68$ 

## **Diagrammatic Representation**

A graph with a horizontal x-axis representing the logarithmic of the cumulative number of journals and a vertical y-axis representing the cumulative number of articles is displayed to demonstrate the applicability of Bradford's law of scattering. Fig. 1 shows that the resulting bibliography begins exponentially and subsequently follows a linear curve, suggesting an application of Bradford's law of scattering.

# CONCLUSION

For the evaluation of scientific research output and to determine scientific indicators scientometric studies have proven to be very useful. Libraries in present times cannot afford to acquire everything, they require to serve the user community. For this purpose, the selection and acquisition of the best literature in the form of books and journals in a given field of research is essential. Scattering is one such bibliometric law that helps professionals to judiciously use its resources in the best possible way. This research endeavor centers on the application of Bradford's Law of Scattering to analyze the dispersion of journal publications concerning Type 1 Diabetes Mellitus. The study focuses on the timeframe from 2012 to 2021, utilizing data sourced from the PubMed database 1542 publications about the type 1 diabetes mellitus condition were published in total of 489 journals. Current Diabetes Report published 100 (6.49%) articles with citations 4550 (4.98%) followed by the International Journal of Molecular Sciences produced 61 (3.96%) with 1545 (1.96%) and the Journal of Diabetes Science and Technology published 54 (3.50%) with 2467 (2.70%). Bradford's law was tested based on the ranked list of journals and publishing output. The literature on Diabetes Mellitus type 1 was distributed in journals according to Bradford's distribution pattern. The distribution pattern of Type 1 Diabetes Mellitus literature in journals aligns with Bradford's Law distribution model, which follows the 1:n:n2 pattern. When we consider the mean multiplier value of 5.79, Bradford's Law is a good fit for this journal distribution, as the percentage of error is minimal at 0.38 percent. Furthermore, when we apply Leimkuhler's model to validate this pattern using the dataset for Diabetes, it also demonstrates validity. The percentage of error is negligible at -0.68 percent, affirming the applicability and suitability of this model for analyzing the selected dataset on Diabetes.

## REFERENCES

- Alabi G. Bradford's law and its application. International Library Review. 1979; 11: 151-8p. https://doi.org/10.1016/0020-7837(79)90044-X
- Alves FIAB. Exemplifying the Bradford's law: an analysis of recent research (2014-2019) on capital structure. Revista Ciências Sociaisem Perspectiva. 2019; 18(35): 92-101p. https://e- revista.unioeste. br/index.php/ccsaemperspectiva/article/ view/21801/14412
- Borgohain DJ, Verma MK, Nazim M, et al. Application of Bradford's law of scattering and Leimkuhler model to information science literature. Collnet Journal of Scientometrics and Information Management. 2021; 15(1): 197-212p. doi: 10.1080/09737766.2021.1943041
- 4. Bradford SC. Sources of information on specific subjects. Engineering. 1934; 137(3550): 85-6p.
- 5. Bradford SC. Documentation. London: Crosby Lockwood and Sons;1948.
- 6. Brookes BC. Bradford's Law and the Bibliography of Science. Nature. 1969; 224(5223):953-56p.

- Chaturbhuj S and Batcha MS. Application of Bradford's law of scattering and Leimkuhler model on fluid mechanics literature published during 2001-2019. Library Philosophy and Practice (e-journal).2020; 4524. https://digitalcommons.unl.edu/cgi/viewcontent. cgi?article=8526&context=libphilprac
- Chung YK. Core international journals of classification systems: An application of Bradford's Law. Knowledge Organization.1994; 21(2): 75-83p. https://www.nomos-elibrary.de/10.5771/0943-7444-1994- 2-75.pdf
- 9. Egghe L. Application of the theory of Bradford's law to the calculation of Leimkuhler'slaw and the completion of bibliographies. Journal of the American Society for Information Science. 1990; 41(7): 469-92p.
- 10. Gautam M and Verma M. Bradford's law application in LISA during the period 2001-2014.
- International Journal of Information Studies. 2019; 11(1):7-28p.https://www.dline.info/ijis/fulltext/ v11n1/ijisv11n1\_3.pdf
- Gayan MA and Singh SK. Application of Bradford's law of scattering and obsolescence in the literature of chemistry: A study based on doctoral theses. Library Philosophy and Practice (e-journal). 2019;3712. https://digitalcommons.unl.edu/ libphilprac/3712/
- 13. Gourikeremath GN, Hiremath R, Kumbar B, and Hadagali GS. Application of Bradford's law of scattering to the literature of microbiology in India. Library Philosophy and Practice (e-journal).2017; 1546. https://digitalcommons. unl.edu/cgi/viewcontent.cgi?article=4434&cont ext=libphilprac
- 14. Karuilancheran C and Baskaran C. Diabetes and Allied Diseases Research in India – A Bradford's approach. International Journal of Library and Information Science Research and Development.2014; 3(2):44-53p. http:// prjpublication.com/backend/file/Diabetes%20 And%20Allied%20Diseases%20Research%20In%20 India%20%20A%20Bradfords%20Approach-2.pdf
- 15. Kumar Satish and Senthilkumar R. Application of Bradford's law of scattering on research publications in astronomy and astrophysics of India. Library Philosophy and Practice (e-journal).2018; 2037. https://digitalcommons.unl. edu/libphilprac/2037/
- Lucier J and Weinstock RS. Diabetes mellitus type
   StatPearls. 2022. https://www.ncbi.nlm.nih. gov/books/NBK507713/
- 17. Leimkuhler FF. The Bradford distribution. Journal of Documentation. 1967; 23(3): 197-207p.
- Nash-Stewart CE, Kruesi LM, Del M, et al. Does Bradford's law of scattering predict the size of the literature in Cochrane Reviews? Journal of the Medical Library Association.2012; 100(2):135–138.https:// www.ncbi.nlm.nih.gov/pmc/articles/PMC3324807/

- Qio JZ, Rongying YS, Dong K. Concentration and scattering distribution of literature information: Bradford's law. Informetrics: Theory, Methods and Applications.2017:89–119p. https://www. researchgate.net/publication/316048626\_ Concentration\_and\_Scattering\_Distribution\_of\_Lit erature\_Information\_Bradford's\_Law
- Ramakrishnaa M, Dhanamjayab VG, Talawar C. Application of Bradford's Law of Scattering to the Dental Science Literature in India During 1999-2018. Online International Interdisciplinary Research Journal.2019; 9(4):397-407p. http://oiirj.org/oiirj/ may2019-special-issue04/57.pdf
- Revathi R, Ranganathan C. Applications of Bradford's Law of Scattering and Leimkuhler Model to Neurochemistry research output at global level. Webology.2021;18(1):1034-41p https://www.webology.org/data- cms/articl es/20220708100644amwebology%2018%20(1)%20 %2086%20pdf.pdf
- Savanur KP. Application of Bradford's Law of Scattering to the Economics Literature of India and China: A Comparative Study. Asian Journal of Information Science and Technology. 2019; 9(1): 1-7p. https://www.trp.org.in/issues/applicationof-bradfords-law-of-scattering-to-the-economicsliterature-of-india-and-china-a-comparativestudy.

- 23. Singh KP, Bebi. Application of Bradford's Law on journal citations: A study of Ph.D. theses in social sciences of University of Delhi. Annals of Library and Information Studies. 2014;61:112-120p. https:// nopr.niscpr.res.in/handle/123456789/29032
- 24. Sudhir KG. Application of Bradford's Law of Scattering to the Physics Literature: A Study of Doctoral Theses Citations at the Indian Institute of Science. DESIDOC Journal of Library & Information Technology. 2010; 30(2): 3-14p. https://doi. org/10.14429/djlit.30.2.3
- 25. Vickery BC. Bradford's law of Scattering. Journal Documentation.1948; 4(3): 198-203p.
- N, 26. Wahid Idrees H. Application of Bradford's Law on Pakistan Journal of Psychological Research, Pakistan Journal of Psychological Research.2017; 32:1-17p. http://search.proquest.com/
- 27. Wardikar VG, Guddhe VP. Application of Bradford's law of scattering to the literature of library and information science: A study of doctoral theses citations submitted to the universities of Maharashtra, India. Library Philosophy and Practice (e-journal).2013; 1054.
- 28. https://digitalcommons.unl.edu/cgi/ viewcontent.cgi?article=2569&context=libphilprac



#### **Subscription Information**

*India* Institutional (1 year) (Print+Online): INR 10500

*Rest of the World* Institutional (1 year) (Print+Online): \$820

*Payment instructions Online payment link:* http://rfppl.co.in/payment.php?mid=15

*Cheque/DD:* Please send the US dollar check from outside India and INR check from India made payable to 'Red Flower Publication Private Limited'. Drawn on Delhi branch

*Wire transfer/NEFT/RTGS:* Complete Bank Account No. 604320110000467

Beneficiary Name: Red Flower Publication Pvt. Ltd. Bank & Branch Name: Bank of India, Mayur Vihar MICR Code: 110013045 Branch Code: 6043 IFSC Code: BKID0006043 (used for RTGS and NEFT transactions) Swift Code: BKIDINBBDOS

Send all Orders to: Subscription and Marketing Manager, Red Flower Publication Pvt. Ltd., 48/41-42, DSIDC, Pocket-II, Mayur Vihar Phase-I, Delhi - 110 091(India) Mobile: 8130750089, Phone: 91-11-79695648 E-mail: sales@rfppl.co.in, Website: www.rfppl.co.in

# What Environmentalists want to Cite: A Bibliometric Study based on Environmental Conservation Journal

# Anil Kumar Dhiman<sup>1</sup>, Sachin Kumar Kaushik<sup>2</sup>

How to cite this article:

Anil Kumar Dhiman, Sachin Kumar Kaushik. What Environmentalists want to Cite: A Bibliometric Study based on Environmental Conservation Journal. Indian J Lib Inf Sci 2024; 18 (1):65–74.

#### Abstract

The current bibliometric study is focussed on an examination of 255 articles/research papers that were published in the Environmental Conservation Journal, a venerable journal in the environmental area by taking into consideration its last five volumes from 2016 to 2020. In addition to discussing the average length of an article and the number of references per article, the study also covers the year and volume-wise number of articles, authorship patterns, most productive authors of the journal, state-wise contribution of the articles, and foreign contribution to the journal.

Keywords: Authorship pattern, Bibliometric Study, Environment and Conservation.

#### INTRODUCTION

A llen Prichard was the first who coined the term "bibliometrics," in 1969 which refers to the "application of mathematics and statistical methodologies to books and other media of communication" (Pitchard, 1969). This phrase bears similarities to the terms "Informatrics" by Nacke (1979), "Librametry" by Ranganathan (1949), and "Scientometrics" by Nalimov and Mulchenko (1969).

Authors Affiliation: <sup>1</sup>Information Scientist, <sup>2</sup>Professional Assistant, Gurukul Kangri (Deemed to be University) Haridwar 249404, Uttarakhand, India.

**Coressponding Author: Anil Kumar Dhiman,** <sup>1</sup>Information Scientist, Gurukul Kangri (Deemed to be University) Haridwar 249404, Uttarakhand, India.

E-mail: akvishvakarma@rediffmail.com

Received on: 30.12.2023 Accepted on: 17.02.2024

Since its inception, bibliometrics has evolved into a scientific method for evaluating the literature that is used to quantitatively analyse academic resources and analyse publications for their significance and influence. Using both theoretical and applied research approaches as well as scholarship, bibliometricians and scholars employ bibliometrics to comprehend their particular literatures and to provide light on the development of disciplines and the phenomenon of scholarly communication (Hérubel, 1999). It makes possible to map out and increase the understanding of a specific topic of study by showing links between the major works, writers, organisations, themes, and other aspects of the subject matter.

#### EARLIER STUDIES

Many bilbiometric studies are conducted for different subjects by the library scientists. Below is given a summary of some of the significant bibliometric research that has been done in the domains of botany and related fields.

Vergidis et al. (2005) have carried out a biliometric study for evaluating the quantity and quality of global research production in the discipline of Microbiology during the years 1995-2003 using the PubMed and Journal Citation Reports databases. 74 journals that were also included in PubMed by searching for the phrase "microbiology," were noted. Further, a total of 89,527 articles were identified for analysis from these journals, and the data on the country in which the research originated was available for 88,456 (98.8%) of them. The individual countries were separated into nine world regions. It was discovered during the study period that Western Europe has produced more research than any other location in the world, with the USA coming in second. The USA had the highest mean effect factor of 3.4. Further, the three regions in which research productivity increased the most were Asia, Latin America, and Eastern Europe.

A bibliometric analysis of Indian botanists' contributions to the Journal of the Indian Botanical Society from 1997 to 2001 was carried out by Dhiman and Rani (2005). The purpose of the study is to determine the length of the articles, the pattern of authorship, the number of citations per article, etc.

Dhiman (2011) used ten volumes of Ethnobotany Journal from 1999 to 2008 to carry out its bibliometric study. The length of papers, citations per article, authorship patterns, and other factors are studied. The outcomes have also been juxtaposed with those of the Dhiman (2000) study, which was carried out for an additional ten years, from 1989 to 1998, for the Ethnobotany journal.

Nongrang and Tariang (2013) carried out a bibliometric analysis on the botany faculties to manage journal collection in North Eastern Hill University Library by gathering information from Web of Science. The study focused on the number of publications by NEHU faculty members who teach botany, along with the nature of authorship patterns, author productivity, and the identification of core journals in the field of botany by applying Bradford's and Lotka's laws, respectively. A total of 1218 articles published in 263 journals were collected for the study. The data analysis reveals that the growth of literature is inconsistent, with varying numbers of publications. Nevertheless, the greatest number of publications - 24 out of 154, were published between 2009 and 2010, accounting for 15.58 percent of the total. Additionally, it is shown that the top 61 (39.61%) papers with three authors have been on the list for the past ten years. The results of the investigation indicated that the observed percentage of writers differed from the expected percentage of authors as predicted by applying Lotka's equation. Specifically, 22 authors earned one citation apiece, while another 22 received two citations.

Dhiman (2015) also examined "Bibliometrics of Ethonobotany," where he analysed numerous publications relevant to various domains of bibliometrics, discussed the history of bibliometrics, and conducted citation analysis. Furthermore, based on the 20 years' worth of yearly volumes of the Ethnobotany journal, ranking lists for the most popular journals, authors, publications, etc. are listed in this work.

A citation based bibliometric analysis was carried out by Dhiman and Rehman (2022) using two issues of 2020 of Bulletin of Pure and Applied Science Section-B (Botany). Current study shows that 97.20 percent of botanists publish their articles and research papers in English. The majority of authors (43.86%) prefer to write research papers and articles as a single author; however, 24.86 percent of authors prefer to write as many authors. Additionally, as journals are cited more frequently from the 2001–2010 decade than books from the earlier 1981–1990 decade, they wish to highlight newer journals more frequently. However, they do also identify texts that are 41–50 years old.

Dhiman (2022) conducted a bibliometric analysis of Indian Fern Journal, a pioneering publication in the subfield of botany, in order to investigate the sources that the Pteridologists wish to cite. Its several issues from number 33 (2016) to volume 37 were used to gather primary data for studies. The results of the study show that two-authored publications (39) constituting 30.70% to the total number of articles, is the highest contribution, while single author contribution is very low. It is also seen that maximum number of articles (58) are finishing in 06-10 range of paper which constitute to 45.66% to the total articles. It is followed by 11-15 range of paper of the articles with 18.11% that consists of 23 articles. And least number of articles is 1 that comprises of 41-45 range of paper length. Further, most of the articles/ research papers are finished within 11-20 and 21-30 reference limits. They are 28 plus 33 in number and if average is calculated it comes to 61 among total 127 articles that is around 48.03%. Thus, it can be said that the journal publishes primary researchbased articles in majority; however, many papers are of review type in nature too are there.

## **OBJECTIVES OF THE STUDY**

The major objectives of the present study are:

• To ascertain year wise and volume wise number of articles.

- To ascertain authorship patterns of contribution.
- To ascertain volume wise authorship pattern of contribution.
- To ascertain year and volume wise degree of collaboration of authors.
- To know the state wise contribution of the articles.
- To as certain country wise foreign contribution of the articles.
- To know the most productive authors of the journal.
- To ascertain the average length of the articles.
- To ascertain the average number of references per article.

#### SOURCE JOURNAL FOR PRESENT STUDY

Environment Conservation Journal is an open access and peer-reviewed journal that is published by Action for sustainable Efficacious Development and Awareness (ASEA). It gives a platform for researchers and scientists to publish scientific research views in the field of agriculture, biological and environmental sciences to promote the speedy propagation of quality research information. The journal encourages submission of two categories of papers- the first category comprises scientific papers and the second category comprises engineering papers. The study of the environment is inherently multidisciplinary. Therefore, the journal publishes a wide range of topics (https:// environcj.in). Table 1 presents various subjects of study being covered in this journal.

Table 1:	Various	Subjects	Covered	in the	e Journal

Agriculture	Animal Physiology
Ayurveda	Botany
Environmental Pollution	Environmental Modeling
Environmental Microbiology	Environmental Ethics
Environmental Management	Environmental Policies
EIA/Environmental Legislations	Ethnobotany
Ethno Zoology	Fish and Fisheries
Limnology	Toxicology
Occupational Safety and Health	Zoology

The major aim of this journal is to publish original research/review papers/ book reviews/ reports on

conferences/ seminars/ important events, news of interest/ information on forthcoming seminar/ books on the environment related aspects. Its five volumes are taken as the source journal for study in which 255 articles are contributed by environmental scientists during 2016-2020. This journal is published on quarterly basis where four issues come out in the market every year in the month of March, June, September and December respectively. Its ISSN is 0973-564X.

#### METHODOLOGY AND DATA ANALYSIS

The data collected from the last five volumes published are Environmental Science Journal during the period from 2016 to 2020. The data comprises of 255 articles published in these journal's issues. All the articles and its references are scanned and the data thus, obtained are tabulated and analyzed as per the objectives of the study.

#### Year Wise and Volume Wise Number of Articles

Table 2 shows the number of articles published in each volume of the Environmental Science Journal during 2016 to 2020. It is truly clear that a total of 255 articles were published in its last five volumes. The maximum number of articles 60 in its volume 18 that was published in the year 2017 constitutes 23.52% to total contribution made in the last five years in this journal. It is followed by 56 articles in its 19th volume with 21.96% of the total articles. However, the minimum number of articles 41 was published in the year 2019 comprising of 16.07 % in its volume 20.

Table 2: Year and Volume Wise Number of Articles

Year	Volume	Number of Articles	Article percentage
2016	17 (1-3)	48	18.82
2017	18 (1-3)	60	23.52
2018	19 (1-3)	56	21.96
2019	20 (1-3)	41	16.07
2020	21 (1-3)	50	19.60
Total	_	255	99.97 (100%)

#### Authorship Pattern of Contribution

Table 3 gives the details the authorship patterns of the article contribution made by the different categories of author time to time. A total number of 39 articles out of 255 articles are contributed by single author that comprises to 15.29%, on other hand 87 out of 255 articles are contributed by two authors comprise of 34.11%. Further, 57 articles out

of 255 were contributed by three authors comprising 22.35%. However, 72 articles are contributed by more than three authors that comprise 28.33% of the total contribution.

Table 3: Authorship Pattern of Contribution

Number of Authors	Article Contribution	Percentage
Single Author	39	15.29
Two Author	87	34.11
Three Authors	57	22.35
More than three Authors	72	28.33
Total	255	100%

#### Volume Wise Authorship Pattern of Contribution

Table 4 shows volume wise authorship pattern of contribution. It is clear that maximum 87 articles out of 255 are contributed by two authors and the other hand the lowest number that is 39 out of 255, are contributed by single author.

If author wise statistics are seen then it can be seen that out of 39 contributions, 03 were contributed by single author in 2017 and maximum of 13 out of total 39 in the year 2020 that comprises to 07.69% and 33.33% respectively. Likewise, among two authors contributions, out of 87 contributions minimum of 11 with 12.64% are contributed in the year 2020 and maximum of 29 with 33.33% in the year 2017.

Further, out of 57 articles by three authors, 10 of them (17.54%) and maximum of 13 (22.80%) are contributed in 2019 and 2016 respectively. However, contribution by more than 03 authors is also significant that is 72 where minimum of 10 (13.88%) and maximum of 18 (25/.00%) are contributed in 2016 and 2017 respectively. Fig. 3 also presents the data analysis more clearly.

#### Year Wise Degree of Collaboration of Authors

The 'Degree of Collaboration' is known as the ratio of the number of collaborative research



Fig. 2: Authorship pattern of contribution

papers to the total number of research papers in the discipline during a certain period of time (Subramanyam, 1983). Table 5 depicts year-wise degree of collaboration among the authors. It is seen from the table that it ranges from 16.67 to 23.92 that is seen in the year 2019 and 2017 respectively.

Further, year wise degree of collaboration is clearly shown through Fig. 4.

State Wise Distribution of the Articles

State wise contribution of the articles is given in table number 6 for the publications in last five-year journals. It may be seen from table 6 that out of 255 articles, maximum 89 (35.60%) contributions came from Uttarakhand and minimum of 0.40% articles comprising of 01 article each came from Andhra

Volume Number	Year	Sii Au	ngle thor	T Aut	wo thors	Th Aut	nree thors	Mor Three	e than Authors	Total Articles
		No	%	No	%	No	%	No	%	
2016	17 (1-3)	10	25.64	12	13.79	13	22.80	10	13.88	45
2017	18 (1-3)	03	07.69	29	33.33	11	19.29	18	25.00	61
2018	19 (1-3)	08	20.51	22	25.28	11	19.29	14	19.44	55
2019	20 (1-3)	05	12.82	13	14.94	10	17.54	14	19.44	42
2020	21 (1-3)	13	33.33	11	12.64	12	21.05	16	22.22	52
	Total	39	99.99 100%	87	99.98 100%	57	100%	72	99.88 100%	255

Table 4: Volume Wise Authorship Pattern of Contribution

Pradesh, Assam, Bihar, Jharkhand, Ladakh and Nagaland.

Uttar Pradesh with 35 (14.00%) articles remained in second position and Madhya Pradesh with 23 (9.20%) on third position respectively.



Fig. 3: Volume wise Authorship Pattern of Contribution

Table 5: Year	Wise Degree of	of Collaboration	among Authors
	0		0

Year	Single Author	Two Author	Three Author	Multiple (Two+ Three Author)	Total	Degree of Collaboration
2016	10	12	13	10	45	17.64
2017	03	29	11	18	61	23.92
2018	08	22	11	14	55	21.56
2019	05	13	10	14	42	16.47
2020	13	11	12	16	52	20.39
Total	39	87	57	72	255	99.98=100

Indian Journal of Library and Information Science / Volume 18 Number 1 / January-April 2024



Fig. 4: Year Wise Degree of Collaboration

Table 6: State wise Distribution of the Articles

Name of State	Number of Contribution	Percentage
Uttarakhand	89	35.60
Uttar Pradesh	35	14.00
Madhya Pradesh	23	9.20
Jammu & Kashmir	22	8.80
Maharashtra	15	6.00
Rajasthan	14	5.60
New Delhi	12	4.80
Karnataka	11	4.40
Haryana	08	3.20
Telangana	08	3.20
Punjab	07	2.80

Himachal Pradesh	06	2.40
Gujarat	05	2.00
Kerala	05	2.00
Mizoram	04	1.60
Odisha	04	1.60
Tamil Nadu	04	1.60
West Bengal	02	0.80
Andhra Pradesh	01	0.40
Assam	01	0.40
Bihar	01	0.40
Jharkhand	01	0.40
Ladakh	01	0.40
Nagaland	01	0.40
Total (India)	245	-
Foreign Contribution	10	-
Total	255	100.00

# State Wise Contribution



Fig. 5: State Wise Contribution



## **Country Wise Distribution of Articles**

Fig. 6: Countries Wise Contribution

#### Country Wise Distribution of the Articles

Table 7: Country Wise Distribution of the Articles

The journal also publishes articles from foreign countries. Table 7 describes the details of the country from where the articles were published in the journal.

It may be seen from the table 7 that maximum contribution of 03 articles came from Iran and minimum of 01 each from Australia, Brazil, and Oman. However, 02 articles each are also contributed by the scientists from Mexico, and Nigeria. Thus, out of 255, 10 articles were received from foreign countries that comes to 03.90% contribution to total of the articles.

Fig. 6 also shows the details of countries who contributed articles in this journal.

Name of the Country	No. of Articles	Percentage
Australia	01	0.39
Brazil	01	0.39
Iran	03	1.17
Mexico	02	0.78
Nigeria	02	0.78
Oman	01	0.39
India	245	96.07
	10/255	3.90
Total	255	99.97=100





#### Most Productive Authors of the Journal

It was noted in the study that a total of 255 articles were contributed by 600 authors, consisting of 12 contributions from 02 authors, 06 by 02 authors and 04 by 04 authors. Table 8 shows the rank wise most productive authors identified during the 2016 - 2020. However, among rest articles, 33 articles are written by 11 authors, 22 articles by 11 authors. 537 authors contribute rests of the articles singly.

Mr. Faheem Ahamad and Dr. Rakesh Bhutiani tops the list of authors with 12 articles each, followed by Raj Kumar Rampal, SPM Tripathi with 06 articles each.

Table 8: Most Productive Authors of the Journal

Name of Authors	No. of Articles	Rank
Faheem Ahamad	12	01
R. Bhutiani	12	01
Raj Kumar Rampal	06	02
SPM Tripathi	06	02
Milind V Shirbhate	04	03
Pramod kumar	04	03
Ulka Yadav	04	03
Uttam Kumar Sharma	04	04
11 Authors 03 each (03x11)	33	05
22 Authors 02 each (02x11)	27	06
537 Author 01 each (01x537)	537	-
Total	600	-

#### Average Length of the Articles

Table 9 describes the length of articles that have been divided into the four categories, viz., 0-5, 6-10, 11-15 and 16-20 pages during the period of 2016-2020. It is observed that the maximum number of articles 124 out of 255, comprising 43.92% are published in 5-10 pages of length.

Further, 91 (28.62%) articles each are finished in 0-5 pages and 31 articles (12.15%) in 15-20 pages length respectively. However, there are 09 articles (00.39%) that are published in 20-25 pages, comprising of 0.39%, which is the maximum length among all the articles published in last five years in the journal.

Table 9: Average Length of Articles

Range of the Pages	2016	2017	2018	2019	2020	Total	Percentage
00-05	23	17	26	13	12	91	28.62
05-10	17	35	22	21	29	124	43.92
15-20	04	08	05	06	08	31	12.15
20-25	04	00	03	01	01	09	00.39
Total	48	60	56	41	50	255	85.08

Thus, maximum contributions are completing of 05-10 pages which can be said for good researchoriented publication.



Fig. 8: Average length of Articles
Range of the Pages	2016	2017	2018	2019	2020	Total	Percentage
0-20	24	27	27	23	27	128	50.19
20-40	18	28	20	13	16	195	37.20
40-60	03	03	06	02	05	19	07.45
60-80	02	02	01	04	00	09	03.52
80-100	02	02	01	04	00	09	07.80
100-120	00	00	00	00	00	00	-
120-140	00	01	00	00	01	02	07.80
Total	47	62	54	42	50	255	99.16 (100.00)

Table 10: Average Number of References per Article

#### Average Number of References per Article

Table 10 depicts the average number of articles published in the last five-year issues of Environment Conservation Journal. It is very clear that most of the articles (128) consisting of 50.19% have 00-20 references per article; followed by 95 articles (37.20%) with 20-40 refences and 19 articles (07.45%) with 40-60 references per articles.

However, there are 02 articles each which possess 80-100 and 120-140 references per article respectively. Thus, the majority of the articles are having 00-20 references per article which are good for the research articles.

### **RESULTS OF THE STUDY**

The major results of the study are:

• The maximum number of articles 60 in year 2017 which constitute to 23.52% is to total contribution. However, the minimum number of articles 41 was published in the year 2019 comprising of 16.07% in its volume 20.

• Out of total 255 articles, 87 (34.11%) are contributed by two-authors followed by 72 articles more than 03 authors and 57 by three authors. While only 39 articles consisting of 15.29% are made by single authors. Thus, the maximum number of articles are written in collaboration that means environmental scientists want to write in collaboration.

• Out of 39 contributions, 03 were contributed by single author in 2017 and maximum of 13 out of total 39 in the year 2020 that comprises to 07.69% and 33.33% respectively. Likewise, among two authors contributions, out of 87 contributions minimum of 11 with 12.64% are contributed in the year 2020 and maximum of 29 with 33.33% in the year 2017. However, contribution by more than 03 authors is also significant that is 72 where minimum of 10 (13.88%) and maximum of 18 (25/.00%) are contributed in 2016 and 2017 respectively.

• Collaboration among the authors ranges from 16.67 to 23.92% that is seen in the year 2019 and 2017 respectively.

• Among state wise contributors, the authors from Uttarakhand tops the list by contributing 89 articles (35.60%) Uttar Pradesh with 35 (14.00%) articles remained on second position and Madhya Pradesh with 23 (9.20%) on third position respectively.

• If talks about the foreign contribution, maximum contribution of 03 articles came from Iran and minimum of 01 each from Australia, Brazil, and Oman. However, 02 articles each are also contributed by the scientists from Mexico, and Nigeria. Thus, out of 255, 10 articles were received from foreign countries that comes to 03.90% contribution to total of the articles.

• A total of 255 articles were contributed by 600 authors, consisting of 12 contributions from 02 authors, 06 by 02 authors and 04 by 04 authors. Table 8 shows the rank wise most productive authors identified during the 2016-2020. However, among the rest articles, 33 articles are written by 11 authors, 22 articles by 11 authors. 537 authors contribute the rest of the articles singly.

• 124 articles out of 255, comprising 43.92% are published in 5-10 pages of length. Further, 91 (28.62%) articles each are finished in 00-05 pages and 31 articles (12.15%) in 15-20 pages length respectively.

• Most of the articles (128) consisting of 50.19% have 00-20 references per article; followed by 95 articles (37.20%) with 20-40 references and 19 articles (07.45%) with 40-60 references per articles. However, there are 02 articles each which possess 80-100 and 120-140 references per article respectively. Thus, most of the articles have 00-20 references per article which are good for research articles.

# DISCUSSION AND CONCLUSION

On the basic of the results of the study, it can be concluded from the study that Environmental Conservation Journal seems to be a pioneer journal in the field of environment studies that is publishing articles on different sub-fields of environment science and botany. It is seen that most of the articles are written in collaboration as they are contributed by two, three and more than three authors. Further, the journal publishes research articles as 05-10 pages with 00-20 references per article seem to be good for a research article because original contributions possess less references and finish in less number of pages. Thus, it can be concluded that this journal is publishing original and research articles continously.

It is hoped this journal is of immense value for environmental scientists in particular and for the students, professionals and the teaching fraternity in general for botanists, zoologists and other fields of study.

# REFERENCES

- Biswas, B.Ch., Roy, A. and Sen, B.K. (2007). Economic Botany: A Bibliometric Study. Malaysian Journal of Library and Information Science, 12 (1): 23-33.
- Dhiman, A.K. (2000). Ethnobotany Journal: A Ten-Year Bibliometric Study. IASLIC Bulletin 45(4): 177-82.

- Dhiman, A.K. (2011). A Bibliometric Study of Ethnobotany Journal-1999-2008. Indian Journal of Information and Services, 5(2): 44 – 55.
- Dhiman, A.K. (2015). Bibliometric Studies in Ethnobotany. SSDN Publishers & Distributors, New Delhi.
- 5. Dhiman, A.K. (2022). Publishing Patterns of Pteridologists: A Bibliometric Study based on Indian Fern Journal. Library Progress, 42 (2): 439-447.
- 6. Dhiman, A.K. and Rehman, H. (2022). What Botanists tend to Cite? Indian Journal of Library and Information Science, 16 (3): 173-83.
- Dhiman, A.K. and Rani, Yashoda. (2005). Indian Botanist's Contribution: A Bibliometric Study Based on Journal of Indian Botanical Society, 1997-2001. Indian Journal of Information, Library & Society, 18 (3-4): 108-15.
- Hérubel, Jean-Pierre V. M. (1999) Historical Bibliometrics: Its Purpose and Significance to the History of Disciplines. Libraries & Culture, 34 (4): 380-388.
- 9. Nacke, O.(1979). Informetric: Ein nuer Name fuereine Disziplin. Achrichtenfuer Dokumentation, 30 (6): 219-226.
- 10. Nalimov, V.V. and Mulchenko, Z.M. (1969). Naukometiya: Lzucheniye Razvitiya Naukikak Informatision nogo Protsessa (Scientometrics: Studying Science as an Information Process). Nauka, Moscow.
- 11. Nongrang, B. and Tariang, B. L. (2013). Bibliometric Study of Research Output of Botany Faculties to manage Journal Collection In North-Eastern Hill University Library. International Journal of Library and Information Studies, 3 (2): 75-80.
- 12. Ranganathan, S.R. (1949). Librametry. Aslib Proceedings. 1: 102.
- 13. Subramanyam, K. (1983). Bibliometric Studies of Research Collaboration: A Review. Journal of Information Science, 6 (1): 33-38.
- Vergidis, P.I., Karavasiou, A.I., Paraschakis, K., Bliziotis, I.A. and Falagas, M.E. (2005). Bibliometric Analysis of Global Trends for Research Productivity in Microbiology. European Journal of Clinical Microbiology, 24: 342–45.



# Marketing Strategy for Information Products and Services in Library: In view of the Ranganathan's five Laws of Library and Information Science

Mahendra Kumar

How to cite this article:

Mahendra Kumar/Marketing Strategy for Information Products and Services in Library: In view of the Ranganathan's five Laws of Library and Information Science/Indian J Lib Inf Sci 2024; 18 (1):75–80.

#### Abstract

The paper emphasises the need of information products and services and marketing strategies five laws of LIS have been amended to match the marketing of Library Services.

Keywords: Marketing; Library Services; OPAC; Blogs; Five laws of library science.

### INTRODUCTION

With rapid advancement in on-line technology sector the libraries and information centres are experiencing radical changes in library operations. Particularly while providing information services to users. In the profession world, and growth in market space, the library

Authors Affiliation: Assistant Professor, Department of Library and Information Science, Dr. Harusingh Gour Vishwavidyalaya (A Central University), Sagar, Madhya pradesh 470003, India.

**Coressponding Author: Mahendra Kumar,** Assistant Professor, Department of Library and Information Science, Dr. Harusingh Gour Vishwavidyalaya (A Central University), Sagar, Madhya pradesh 470003, India.

E-mail: mahendrak@dhsgsu.edu.in

Received on: 26.04.2023

Accepted on: 15.06.2023

and professionals must assume a pro active role to cope with increasing competition. The new demand brings forward a number of unanswered questions. What is the nature of this competition? How can libraries and information centres attract alternate sources of funding when government spending are at low ebb? What are strategies for expanding the customer based and fulfilling their requirements? And finally, what is preventing library professionals from developing successful marketing of services? Marketing strategy of information services in the line of their provisions through new information technologies particularly in Internet (Web) responds to these questions.

#### Marketing in Library

According to Philip Kotler "A social and managerial process by which individuals and groups obtain what they need and want through creating, offering and exchanging products of value with others",<sup>1</sup> Adam Smith says "Marketing is a

stance and an attitude that focuses on meeting the needs of users."<sup>2</sup> one commonly believes that the key to achieving organizational goals consists in determining the needs and wants of target market and delivering the desired satisfactions.

Marketing is a process that can help managers of libraries and information centres in achieving selfsufficiency in their resources, It aims to provide an optimum level of services to reach more potential users and to encourage the use of library resources.

### 3. Levels of Marketing

Primarily these are two levels of marketing:

**3.1. Strategic Marketing:** Strategic marketing attempts to determine how an organization competes against its comp Strategic editors in a market place. In particular, it aims at degenerating competitors.

**3.2. Operational Marketing:** Operational marketing executes marketing functions to attract and keep customers and to maximize the value derived from them. It also aims to satisfy the customer with prompt services and meeting the customer expectations. Kotler opines that the "Business success is not determined by the producer but by the customer."

In the process of conceptualization, the customer orientation already embedded in. Dr. S.R. Ranganathan's concept of the five laws of library science are still valid. These can be for the moulded as under:

**First Law:** (Maximize the use of library products/ services);

**Second Law:** (Every customer must meet his/ her demand);

**Third Law:** (Find customer for every library library products/services);

**Fourth Law:** (Keep the pace with emerging trends and technologies);

Fifth Law: (Competitiveness every lasting).

### 4. Marketing Strategy in the field of Information:

A Strategy/Planning is only an articulation of what is planed to achieve. In the field of information marketing strategy is based on a set of key principles. These can be underlined as:

**4.1.Knowledge based Organization:** The libraries is knowledge based organization. Information is critical to the success of the library and needs to

be managed as a strategic resource. Library system should enable people to create, analyse, publish, store and archieve data/information.

**4.2. Access:** Potential users of library should have ready access to the stored Information, whether in the campus or off the campus.

**4.3. Information Infrastructure:** The University Institute will provide an information infrastructure to facilitate information handling processes and procedures across the University and to ensure that they are coherent and coordinated.

**4.4. User of Information:** All users should be fully aware of their rights and responsibilities in the handling of information.

**4.5. Communications:** The library/information centres should provide a communication system for the rapid distribution of information with staff, students and external stakeholders.

**4.6. Ownership:** Each area of information or data should have a custodian who will be responsible for ensuring the quality of the data and for implanting the access policy.

### 5. Factors Influencing Information Market

Following are factors that will influence the information market:

**5.1. Market Size:** The market networks coming up at local, regional, national and global level. The marketing and promotional activities associated with them will increase awareness of information at all levels among potential users.

**5.2. Information vendors:** It is not expected that there will be an exponential growth of information suppliers because it involves specialization, financial backing and enormous efforts.

**5.3. Services and strategy:** Services and strategy are the heart of the future information that will define the scope of the market and to which suppliers must orient both their operations and their planning.

# 6. Marketing Strategy of Information in Libraries and Information Centres:

A library is a social and service institution providing information to its members. Its traditional functions include selection, acquisition, storage, processing, circulation and reference. Over a period of time, due to change in nature of demands by the clients, libraries have expanded their document delivery systems. Today translation, editing, publishing and reprographic services have been added to the traditional services mentioned in the following table:

Activities	Products/Services			
Selection of documents	Bibliographies, Current awareness.			
Indexing and abstracting	Indexed bibliographies, Abstracting bulletins, Custom searches.			
Extraction	Digital extracts, Descriptive reviews/ state of the art report.			
Evaluation	Critical review of area, critical compilation of data, criteria for experimentation etc.			
Other activities	Translation, editing, publishing, reprographic services.			

#### 7. Marketing Research in Information Services:

Due to importance of marketing strategy in Information Services many studies have been conducted in this area. Some are as under:

Khali Klaib (2004)<sup>3</sup> conducted a survey of libraries and information centres in Jordan to examine the application of the marketing concept to the products and services of LIS and to investigate users attitude towards free or free -based service.

Vaishnav (2017)<sup>4</sup> did a case study of Dr. Babasaheb Ambedkar Marathwada University Library and pointed out that the university library uses marketing process to satisfy the needs and demands of user.

Panday (2021)<sup>5</sup> conducted a survey of the M S University of Baroda to explore the feasibility of marketing library and information services and products.

Sharma and Choudhary (2022)<sup>6</sup> conducted a case study of All India Management Association library. The author found that experience in marketing of information services and products is very encouraging at the AIMA library.

It can be safely concluded that marketing methods if applied appropriately can make a vital contribution to library and information work.

#### 8. Marketing Information Services Globally:

There have been so many new methodologies for promoting information services of a library. Some are mentioned below:

**8.1. OPAC:** An Online Public Access Catalogue is a computerized online catalogue of the materials held in a library, or library system. The user in the library can search the bibliographic database and find specific information online. The search facility also apprises the user about the availability of each item for circulation, including current status of individual copies of a title and reserve status. The

scope of these services include:

**8.1.1. Online Catalogues:** The catalogues of Title, Author, Subject, Classified, KWIC Index, Publisher. Etc. are available online.

**8.1.2.** Current Serials: To provide online information on holdings of current serials including recent issues received in library.

**8.1.3. Recent Additions:** To make available new additions to the library, to the users.

**8.1.4.** Multiple Databases: To support the definition of multiple databases based on types of documents for searching in OPAC.

**8.1.5.** Other services from OPAC Client: Updating subject interest profile for SDI by users themselves; request for acquisition of a document; while browsing/ searching various catalogues, facility to develop request online for putting a specific title on reserve, etc.

**8.2. Web OPAC**<sup>7</sup>: Web OPAC is a web-based search plateform, developed with advanced information technologies for serving information to the users at the fingerprints, regardless of physical location whether the member is in the library or at remote location. Following are some of the library services can be made available through WebOPAC:

- Library Catalogue
- Search facility on entire database
- New Arrivals, Current Awareness Service
- Selective Dissemination of Information
- Current Journals
- Online Journals
- Popular Documents based on circulation and reservations
- Place reservation/hold on certain documents
- Outstanding list renewal facility optional.

**8.3.** Library Blogs<sup>8</sup>: Blog is a website, usually maintained by an individual, contains chronologically the brief entries of commentary, descriptions of events, etc. Promoting library's services, resources, and programs online becomes a lot easier with the help of a blog. Blog can be very effective tools for reaching online audiences.

**8.3.1. Marketing library services:** Many libraries/Information centres have already been using blogs in various ways for different purposes. The most obvious applications of blogs are for propagating library news, notices and services, which are needed to be updated frequently and easily. Blogging software helps in making the job easy enough for anyone to do it. Besides this there are other ways of using blogs in a library, some are here:

**8.3.2. Promoting library events:** A blog created for a library can promote its regular events and programs. The blog reachs out beyond the visitors of regular Website of the library. The RSS feed can be set up for the blog to alert everyone in the community to include the headlines of the library on their sites or can use an RSS newsreader to see what is up at the library. Libraries can also try E-commerce sites to turn each visitor into a repeat customer.

**8.3.3. Supporting Users:** Most of the library visitors hunt the library on-line to find out what new materials like books, videos, CDs, heve been added to the collection. Regular updating of the information may serve the clients by setting up topics on your blog for each genre: mysteries, science fiction, romance, and so on. The college and university libraries can prepare special alerts about new resources for particular departments or colleges through blog.

**8.3.3. Community Engagement:** In a library blog, new book reviews and book lists can be posted for information as well as selection for users. An online book discussion area can be created for readers to recommend books. The users community can also be invited to comment and suggest for inclusion and modification in the blog.

# 9. Challenge of Marketing of the Information Products and Services in the library

- 1. Inadequate budgetary allocations for library services
- 2. non-automation of library operations
- 3. Inadequate infrastructure
- 4. Understaffing

5. Low computer/digital literacy among staff

# 9.1. Inadequate budgetary allocations for library services.

Uzoigwe (2004)<sup>10</sup> study revealed that the failure of policymakers and fiscal managers to make adequate budgetary allocations for library services compounds the funding problems of Nigerian libraries. She adds that the perception of the library as a social and non-profit service provider has greatly undermined the ability of library administrators to identify, develop and exploit alternative sources of revenue. For marketing to take place, money must be involved, effective marketing involve reasonable amount of money. Resources must be available which marketer will be focus on, most especially current resources. To acquire current resources involve money, and for marketing to be effective library need money to stock their information resources, therefore inadequate budgetary allocation remain a challenge.

### 9.2. Non-automation of library operations

Uzoigwe study further reveals that another issue is the issue of non-computerization and nonautomation of library operations and services. Inline with the above, Asemoah-Hassan (2002)9 in his study maintain that very few Nigerian libraries are fully computerized and automated. As a result of inadequate telecommunication 13 facilities, low level of computer literacy among library staff, dearth of computer gadgets and poor level of internet capabilities, clumsy and error prone manual procedures are seen as threats in marketing services in Nigerian libraries.

The most trend in the information world of today is information and communication technology (ICT) services. Most research aid are found online, and recent number one information product to market to attract patron still remain ICT. This is mean for library to market their product and services they need to upgrade their service to include ICT based services (library automation). Most library are not automated, the automated ones still have to up their services and when this is done their product and services will sell once marketing take place. Therefore, non automation still pose a challenge to marketing of information product and services.

### 9.3. Inadequate infrastructure

People like modern infrastructure facilities and this is enough to market information product and services, but inadequate infrastructure is a challenge. One will prefer to enter new vehicle than old vehicle while on transit, same goes with information product. Marketing usually involve new product and services, meaning that for library to market, they need to acquire new information product and introduce new services that will attract the user to patronize their services. There will be no need to market old outdated product, to market and see 14 result, new product have to be in place, new services have to come in, and old services have to be upgraded to meet the need of the users. The state of infrastructure facility in most Nigeria library is inadequate and this pose a great challenge in the marketing of information product and services.

### 9.4. Understaffing

For library to carry out the marketing of information product and services, there must be adequate staff that will render the services when the user respond to the call that will be put across during the marketing. There is serious unavailability of professional staff in almost all the library in Nigeria. Like staff to perform indexing services, abstracting services, creation of webpage, building of database, editing service, packaging service are just few. There is no need to market when there is no staff to carry out the service, the need to employ professional librarian becomes an urgent need before marketing will take place. Having adequate professional librarian is enough to market library product and services, while unavailability of staff remain a huge challenge.

### 9.5. Low computer / Digital literacy among staff

Automated library need computer literate librarian to manage the services. Electronic indexing and abstracting, webpage and database creation need one who is computer competence. To advertise/market the inclusion of ICT based services in the library, there is need to have librarian who have computer knowledge and skill. Low computer literacy among the library staff is a challenge.

### 10. Recommendations

Thereforeit is some recommended as follows:

- Library should look inward and take advantage of fee-based library services to augment inadequate budgetary allocation coming to them for effective library services.
- Library should as matter of urgency automate

their library and make it functional to attract good number of users once marketing is done.

- The money generated from internal source should be adequately used to acquire solar energy and power generating set to keep ICT unit functional and attractive
- Modern computer gadget should be acquired to serve ICT user, and money made from sells of internet service access code, and reprographic services should be used to acquire more gadget, service the gadget and use to acquire current information resources.
- Government should come to the rescue of library, by employing enough librarian to manage service provision library.
- Periodic staff training should be made mandatory to train staff at periodic interval to acquire most library needed skills. Library management should take it upon them to always acquired current needed information resources from part of money made from internal source, to attract new and more user coming to library to satisfy their need.

# REFERENCES

- 1. Kotler (Philip). Marketing management: analysis, planning, implementation and control 1994. Prentice-Hall of India; New Delhi.
- Ranganathan (S.R.). Five laws of library science. 1931. Madras Library Association. Madras.
- 3. Khali Klaib (FJA). Marketing of information products and services by libraries and information centres in Jorden. Ph.D Theses. 1994. Jiwaji University, Gwalior.
- Vaishnav (A.A.). Marketing university libraries. 1997. Rawat. Jaipur.
- 5. Panday (S.N.). Information marketing: need of the hour. ILA Seminar papers. 47th. All India library conference. 2001: Warrangal.
- 6. Sharma (R) and Chaudhary (P.K.). Marketing value added management information to user community: a case study of AIMA library. 48th All India library conference 2003. Bangalore.
- 7. http://www.libsuite.com/webopac.htm
- 8. http://en.wikipedia.org/wiki/OPAC/
- 9. Asemoah-Hassan, H. R. (2002) The state of information and communication technology (ICT) in university libraries in the West African sub-region. Kumasi: SCAULWA.
- 10. Uzoigwe, C. U (2004) Information technologies in

Libraries: The Nigerian case. Coal City Libraries, 1(1), 28-41 Yi, Z. (2016) Effective techniques for

the promotion of Library services and resources. Information Research, 21(1), 1-22.

# Impact of Library Resources on Prison Education in India: A Review of Re-habilitation Efforts

## Sana Iliyas<sup>1</sup>, Mehtab Alam Ansari<sup>2</sup>

#### How to cite this article:

Sana Iliyas, Mehtab Alam Ansari. Impact of Library Resources on Prison Education in India: A Review of Re-habilitation Efforts. Indian J Lib Inf Sci 2024; 18 (1):81–86.

#### Abstract

This review synthesizes findings from two case studies focusing on the role of library resources in facilitating education and rehabilitation in Indian prisons. The first study explores the educational landscape within Indian prisons, highlighting various initiatives and challenges in delivering effective educational programs to inmates. The second study delves into the specific impact of library services in the District Jail of Gautam Buddha Nagar, examining how access to diverse reading materials and information resources aids in the intellectual and emotional development of inmates. Together, these studies underscore the significant role of library resources in supporting prisoner education and rehabilitation in India. They reveal how well-managed prison libraries, equipped with a broad range of materials and services, can contribute to the reformation, skill development, and overall well-being of inmates, thereby playing a crucial part in their successful reintegration into society.

Keywords: Library Resources; Prison Education; Rehabilitation; Indian Prisons.

#### INTRODUCTION

The Indian prison system with its complex history and evolving policies stands at a pivotal juncture where reform and rehabilitation have become key focal points (McMahon, 1992). This review paper delves into the intricacies of this system, particularly examining the transformative role of education in the context of prison reform. Central to this exploration is the case study presented by Amit

Authors Affiliation: <sup>1</sup>Professor, <sup>2</sup>Research Scholar, Department of Library & Information Sciences, Aligarh Muslim University, Aligarh 202001, Uttar Pradesh, India.

**Coressponding Author: Mehtab Alam Ansari**, Professor, Department of Library & Information Sciences, Aligarh Muslim University, Aligarh 202001, Uttar Pradesh, India.

E-mail: mehtabalamansari1@gmail.com Received on: 25.05.2023 Accepted on: 30.06.2023

© Red Flower Publication Pvt. Ltd.

Kumar Jain and Upendra Nabh Tripathi in their work, "Prisoners Education in India: A Case Study of IGNOU with special reference to Haryana," which illuminates the initiatives and impacts of the Indira Gandhi National Open University (IGNOU) in the realm of prison education.

Historically, the Indian prison system has been predominantly punitive, with a primary focus on retribution and deterrence. However, the past few decades have witnessed a paradigm shift, emphasizing rehabilitation and reintegration of inmates into society (Cullen, 2023). This shift acknowledges the multifaceted nature of crime and punishment, where correctional facilities are seen not just as means to isolate offenders but as institutions capable of fostering change and personal growth (Hannah-Moffat, 2000). Education has emerged as a cornerstone in this rehabilitative approach, offering a pathway for inmates to acquire new skills, reshape their identities, and prepare for a productive life post-incarceration (Ricciardelli& Peters, 2017).

At the forefront of this educational revolution in Indian prisons is IGNOU, a premier open university known for its inclusive and accessible educational programs. IGNOU's foray into the prison system marks a significant step in extending educational opportunities to a section of the populace often marginalized in the context of formal education. As detailed in the case study, the university's initiatives in Haryana prisons showcase a model of educational intervention that combines academic learning with personal development, thereby contributing to the holistic rehabilitation of prisoners.

The Indian prison system, characterized by its complex challenges and diverse inmate population, presents a unique context for educational and rehabilitative initiatives. This paper examines the role of library resources in facilitating education and rehabilitation within this system, drawing on insights from two pertinent case studies. The first case study offers an in-depth exploration of the educational programs available in Indian prisons, highlighting the challenges faced in delivering effective and meaningful education to inmates. It sheds light on the current state of educational facilities, the types of programs offered, and the barriers to educational access and quality within the prison environment.

The second case study zeroes in on the specific impact of library resources in the District Jail of Gautam Buddha Nagar. This analysis provides a detailed look at how access to a diverse range of reading materials and informational resources can significantly contribute to the intellectual and emotional growth of prisoners. The study illustrates the transformative potential of well-equipped library facilities in prisons, emphasizing their role in supporting literacy, skill development, and overall personal development of inmates.

Together, these studies form the foundation for a comprehensive review of how library resources can be strategically used to enhance the educational and rehabilitative programs in Indian prisons. They underscore the need for more effective integration of library services into the prison education system, highlighting the potential benefits for inmate rehabilitation and successful reintegration into society. This paper aims to contribute to the discourse on prison education in India, offering insights into the ways in which library resources can serve as crucial tools for change and improvement in the lives of incarcerated individuals.

# **Review of Previous Studies**

### *i. Prison education and its impacts*

The impact of prison education has been the subject of extensive research. Studies in this field have primarily focused on the effects of educational programs on reducing recidivism, enhancing the personal development of inmates, and contributing to overall societal well-being.

### ii. Reduction in Recidivism

A cornerstone study by Davis et al. (2013) conducted a comprehensive meta-analysis of correctional education in the United States. The study revealed that inmates who participated in educational programs were 43% less likely to return to prison than those who did not participate. This significant reduction in recidivism highlights the effectiveness of educational interventions in breaking the cycle of repetition. Similarly, a report by the Rand Corporation, funded by the U.S. Department of Justice, further corroborates these findings. The report suggests that for every dollar spent on prison education, four to five dollars are saved on three-year re-incarceration costs (Davis et al., 2014). This cost benefit analysis highlights not only the social but also the economic advantages of investing in prison education.

# *iii. Personal Development and Institutional Behaviour*

The impact of education on the personal development of prisoners is another critical area of research. A study by Steurer *et al.* (2001) found that participation in educational programs significantly improved inmates' attitudes and behavior while they were incarcerated. The study noted improvements in self-discipline, interpersonal skills, and overall institutional conduct. Moreover, research by Vacca (2004) emphasized the role of education in enhancing inmates' self-esteem and coping skills. This study highlighted that prison education contributes to a sense of achievement and self-worth among inmates, which is crucial for their rehabilitation and reintegration into society.

# *iv.* Workforce Development and Societal Benefits

The societal benefits of prison education, particularly in the context of workforce

development, have been a focal point of several studies. According to Crayton and Neusteter (2008), prison education programs can potentially equip inmates with the skills required to secure employment post-release, thereby contributing to workforce development. This is especially important considering the barriers to employment faced by ex-offenders.

A study by Bozick et al. (2018) found that correctional education programs, including vocational training, significantly increased the postrelease employment rate of inmates. This increase in employability not only aids the ex-offenders in leading productive lives but also benefits the economy by creating a more skilled and diverse workforce.

### v. Enhancing Rehabilitation through Library Resources in Indian Prisons

The rehabilitation of Indian prison inmates through educational programs is a focal area of two case studies highlighting the role of library resources. The first study outlines the educational landscape within prisons, addressing challenges like resource scarcity and the need for tailored educational content (Jain & Tripathi, 2018). It emphasizes the vital role of education in rehabilitation and the importance of enhancing educational resources in prisons. The second study investigates the District Jail of Gautam Buddha Nagar, showing how library services contribute to inmates' intellectual and emotional development (Sharda & Tiwari, 2022). This study underscores the significance of well stocked prison libraries in reforming inmates, enhancing literacy, and preparing them for societal reintegration. Collectively, these studies advocate for integrating comprehensive library services into prison education programs, emphasizing the necessity of diverse, accessible, and relevant resources to support effective rehabilitation and successful reintegration of inmates into society (Jain & Tripathi, 2018; Sharda & Tiwari, 2022).

# Ignou's Role in Prisoners' Education

# *i.* Establishment and Objectives of IGNOU's Education Programs for Prisoners

Indira Gandhi National Open University (IGNOU) has been at the forefront of providing educational opportunities to prison inmates in India. This initiative started in 2010, was aimed at catering to the learning needs of both literate and semi-literate prisoners, free of cost (Jain & Tripathi, 2018). The primary objective of IGNOU's intervention in prison education was to facilitate the reformation and rehabilitation of inmates through education. This approach aligns with the broader goal of transforming prisons from mere confinement facilities to spaces where inmates can gain education and skills for a better life post-release.

# *ii. Analysis of Enrolment Data and Demographics of Participants in Haryana*

Data from the IGNOU Regional Centre in Karnal, Haryana, reveals significant engagement of inmates in educational programs. Between 2011 and 2017, a total of 4,131 jail inmates, including both fresh admissions (3,435) and re-registrations (696), were enrolled in various courses offered by IGNOU (Jain & Tripathi, 2018). The enrolment data showed a notable increase over the years, with the highest fresh enrolment recorded in 2015. The participants' demographics primarily consisted of male inmates, accounting for 98.63% of fresh admissions, while female inmates comprised a small fraction.

### *iii. Curriculum and Educational Offerings by IGNOU in Prisons*

The curriculum offered to prison inmates by IGNOU includes a wide range of programs, from literacy level courses to higher education degrees. These educational programs are designed to cater to the diverse needs of the prison population, considering their varying educational backgrounds and interests. IGNOU's offerings include vocational training, degree programs, and certificate courses, providing inmates with multiple options to pursue education that aligns with their interests and future aspirations.

Implementing these programs within the prison premises is facilitated by establishing Special Study Centres (SSCs) in various jails. These centers provide a structured environment for education, enabling inmates to engage in a formal learning process. Study materials and library facilities are made available to the inmates, ensuring they can accessthe necessary resources. Furthermore, IGNOU has made provisions for conducting examinations within jail premises, making the entire educational process accessible and convenient for the inmates.

IGNOU's initiatives in providing education to prison inmates in Haryana represent a significant step towards reforming the prison system and offering inmates a pathway to rehabilitation and reintegration into society. The substantial enrolment Fig.s and the diverse range of educational programs highlight the success and impact of these initiatives. As such, IGNOU's role in prison education serves as a model for correctional education programs, demonstrating the potential of education in transforming lives and contributing to societal wellbeing.

# Library's Role in Prisoners' Education and Rehabilitation

In the context of Indian prisons, the significance of library resources in the education and rehabilitation of inmates is profoundly illustrated in two detailed case studies. The first study offers an in-depth analysis of the educational environment within these prisons, shedding light on the pivotal role that libraries play in mitigating educational challenges and facilitating cognitive and personal development among inmates (Jain & Tripathi, 2018). It emphasizes the necessity of providing inmates with access to a variety of books and educational materials to bridge educational gaps. The second study, focusing on the District Jail of Gautam Buddha Nagar, further underscores the importance of libraries, demonstrating their effectiveness in improving literacy rates, enhancing vocational skills, and instilling a sense of purpose and growth in prisoners (Sharda & Tiwari, 2022). This study highlights the transformative potential of well-stocked and managed library facilities in the reformation process of inmates, preparing them for a successful reintegration into society. The integration of comprehensive library services into prison education programs is strongly advocated in these studies, pointing to the need for diverse, accessible, and relevant resources. This combined evidence positions libraries not just as repositories of books, but as dynamic spaces that enable learning, personal growth, and effective rehabilitation, underscoring their critical role in the broader landscape of educational resources in Indian prison rehabilitation efforts (Jain & Tripathi, 2018; Sharda & Tiwari, 2022).

# **Impact and Success Stories**

# *i.* Discussion on the Impact of IGNOU's Programs on Prisoners' Rehabilitation

Indira Gandhi National Open University (IGNOU) educational initiatives in Indian prisons have marked a significant shift in the rehabilitation approach towards inmates. IGNOU's programs are not just academic courses but pathways to transformation, as they imbue inmates with knowledge, skills, and a renewed sense of purpose. The case study by Jain and Tripathi (2018) highlights the profound impact these programs have had in reforming prisoners, equipping them with educational qualifications and vocational skills crucial for their reintegration into society.

### *ii.* Success Stories of Prisoners Benefiting from IGNOU's Education Programs

The success stories emerging from IGNOU's prison education programs are both inspiring and illustrative of the transformative power of education. One notable example is Bhanu Bhai Patel, who completed over 54 degrees, diplomas, and certificate programs from various universities, including 23 from IGNOU. His educational pursuit in prison led to recognition by the Unique World Records and Asia Book of Records, and he later joined Dr. BabasahebAmbedkar Open University as a consultant. Another example is Perarivalan, involved in the Rajiv Gandhi assassination case, who completed his BCA and MCA from prison and achieved the highest marks in his 12th standard exams among all prisoners (Jain & Tripathi, 2018). These stories exemplify how education can reshape the lives of individuals who have been marginalized and incarcerated.

The initiatives of IGNOU in the realm of prison education in India demonstrate a successful model of rehabilitation and reformation through education. The impact of these programs extends beyond academic achievement to include improved prospects for reintegration, reduced recidivism, and the transformation of inmates into productive members of society.

# *iii. Challenges Faced in Implementing Education Programs in Prisons*

The implementation of educational programs in prisons, as spearheaded by IGNOU, encounters a range of challenges. One of the primary issues is the variance in educational backgrounds among prisoners, which necessitates a diverse and adaptable curriculum. The article by Jain and Tripathi (2018) highlights the challenge of catering to both literate and semi-literate prisoners, requiring a flexible approach to course design and delivery.

Additionally, logistical challenges such as

limited resources, infrastructural constraints, and the need for secure and controlled environments pose significant hurdles. Delivering educational materials and facilitating exams within prisons' confined and regulated spaces require meticulous planning and coordination. Moreover, there is often resistance to educational initiatives within the prison system, stemming from institutional bureaucracy and the prisoners' reluctance or lack of motivation to engage in educational activities.

### *iv.* Opportunities for Expanding and Enhancing Educational Initiatives for Prisoners

Despite these challenges, the successful implementation of IGNOU's programs in prisons also presents numerous opportunities for expanding and enhancing educational initiatives. The increasing recognition of education as a vital component of rehabilitation offers a chance to allocate more resources and support towards these programs. The potential for collaboration with other educational institutions and NGOs can further strengthen the reach and efficacy of these initiatives.

The use of technology presents another significant opportunity. Online and digital learning platforms can be adapted to the prison setting, allowing for a broader range of courses and more flexible learning options for inmates. Furthermore, the success stories and positive outcomes of existing programs can be used to advocate for expanding educational opportunities in prisons, influencing policy and public perception towards rehabilitating prisoners through education.

While the challenges in implementing prison education programs are significant, the opportunities they present are equally substantial. As evidenced by the IGNOU case study, with strategic planning, collaboration, and technology integration, these educational initiatives can be effectively expanded, significantly contributing to the rehabilitation and reintegration of prisoners into society.

# Impact of Library Resources on Prison Education in India

The impact of library resources on prison education in India, as elaborated in two detailed case studies, is integral to the rehabilitation and development of inmates. The first study provides

an in-depth analysis of the educational challenges faced by prisoners, highlighting how libraries play a crucial role in overcoming these obstacles by offering diverse and accessible learning materials (Jain & Tripathi, 2018). It underscores the significance of education in the rehabilitation process, advocating for enhanced educational resources in prisons. The second study, focusing on the District Jail of Gautam Buddha Nagar, reveals the transformative impact of library services on the inmates' intellectual and emotional growth. This research shows the importance of well-managed libraries equipped with a variety of reading and informational materials in improving literacy rates, vocational skills, and preparing inmates for reintegration into society (Sharda & Tiwari, 2022). These studies collectively argue for the integration of comprehensive library services into prison education programs, emphasizing the need for libraries to be dynamic, inclusive, and relevant. The findings suggest that libraries are not just educational facilities but are critical to the holistic development and successful societal reintegration of inmates, playing a significant role in the broader context of prison rehabilitation efforts in India (Jain & Tripathi, 2018; Sharda & Tiwari, 2022).

# CONCLUSION

i. Educational Challenges and Library Solutions: The paper reveal that Indian prisons face significant educational challenges, including limited access to quality resources and tailored learning materials. Libraries emerge as pivotal solutions, offering diverse and accessible educational content that addresses these challenges effectively.

**ii. Case Study of Gautam Buddha Nagar Jail:** The study on Gautam Buddha Nagar Jail exemplifies the transformative impact of library services in a prison setting. The findings show that well-equipped libraries significantly contribute to the intellectual and emotional development of inmates, facilitating a more effective rehabilitation process.

**iii.** Library Resources and Rehabilitation: The integration of library resources in prison education is crucial for the holistic rehabilitation of inmates. Libraries not only provide educational benefits but also support the emotional and psychological well-being of prisoners, aiding in their overall reformation and preparation for societal reintegration.

#### iv. Impact on Literacy and Vocational Skills:

A key finding across the studies is the positive impact of library resources on improving literacy and vocational skills among inmates. Access to a variety of reading materials and informational resources enhances the skill set of prisoners, equipping them for better opportunities postrelease.

v. Recommendations for Prison Education Systems: The papers recommend the integration of comprehensive library services within prison education systems. This integration should emphasize providing diverse, accessible, and relevant library resources, aligning with the broader objectives of rehabilitation and successful societal reintegration of inmates.

# REFERENCES

- Bozick, R., Steele, J., Davis, L., & Turner, S. (2018). Does providing inmates with education improve postrelease outcomes? A meta-analysis of correctional education programs in the united states.Journal of Experimental Criminology, 14(3), 389-428. https://doi.org/10.1007/s11292-018-9334-6
- Crayton, A., &Neusteter, S. R. (2008). The Current State of Correctional Education. Prisoner Reentry Institute at John Jay College of Criminal Justice. https://www.prisonlegalnews.org/news/ publications/pri-crayton-state-of-correctionaleducation/
- Cullen, F. T. (2013). Rehabilitation: Beyond nothing works. Crime and Justice, 42(1), 299–376.https:// doi.org/10.1086/670395
- Davis, L. M., Bozick, R., Steele, J. L., Saunders, J., Miles, J. N. V., & Monica, S. (2013). Evaluating

the effectiveness of correctional education: A meta-analysis of programs that provide education to incarcerated adults. United States of America.

- Davis, L. M., Steele, J. L., Bozick, R., Williams, M. V., Turner, S., Miles, J. N. V., Saunders, J., & Steinberg, P. S. (2014). How Effective Is Correctional Education for Incarcerated Adults? In How Effective Is Correctional Education, and Where Do We Go from Here? The Results of a Comprehensive Evaluation (pp. 7-20). RAND Corporation. http://www.jstor.org/ stable/10.7249/j.ctt6wq8mt.10
- Hannah-Moffat, K. (2000). Prisons that empower. British Journal of Criminology, 40(3), 510–531. https://doi.org/10.1093/bjc/40.3.510
- Jain, A., &UpendraNabhTripathi. (2018). Prisoners education in india: A case study of IGNOU with special reference to haryana. Educational Quest: An International Journal of Education and Applied Social Sciences, 9(1), 39–46. http://dx.doi.org/10.3 0954/2230%E2%80%937311.2018.04.06
- Mcmahon, M. W. (1992). The persistant prison?
  Rethinking decarceration and penal reform. University of Toronto Press.
- 9. Ricciardelli, R., & Adrienne M.F. Peters. (2017). After prison. Wilfrid Laurier Univ. Press.
- Sharda, P., & Tiwari, R. (2022). Information needs of inmates using library of district jail, Gautam Buddha Nagar: A case study. Journal of Indian Library Association, 57(2), 123-133.
- 11. Steurer, S. J., Smith, L., & Tracy, A. (2001). OCE/ CEA Three State Recidivism Study. Correctional Education Association.
- 12. Vacca, J. S. (2004). Educated prisoners are less likely to return to prison. Journal of Correctional Education, 55(4), 297-305.



# Newspaper Reading Habit of College Students: A Study of Guru Nanak College Budhlada

# Inderjeet Singh Maan<sup>1</sup>, Surinder Singh Ghuman<sup>2</sup>

#### How to cite this article:

Inderjeet Singh Maan, Surinder Singh Ghuman/Newspaper Reading Habit of College Students: A Study of Guru Nanak College Budhlada/Indian J Lib Inf Sci 2024; 18 (1):87-96.

#### Abstract

The present study was done to know the newspaper reading habits of the students studying at the Guru Nanak College Budhlada which is situated in the rural belt of Punjab. Structured questionnaire was prepared and distributed to one hundred students of college through google form. Study was conducted to know the various preferences regarding newspaper reading. Data received from the google form was presented through pie charts and graphs. Study found that most of the respondents daily read newspaper for current affairs purpose and education is their favorite section. Students prefer hard copy of the newspaper in Punjabi language. College students find availability of news on other media and busy schedule as major hindrances to reading newspaper.

Keywords: College; Format; Newspaper; Reading.

#### INTRODUCTION

Press is considered an important pillar of the democracy. In democracy it acts as a watch dog of the nation. Newspapers provide important

Authors Affiliation: 1Assistant Professor, Department of Library & Information Science, Guru Nanak College, Budhlada, Mansa, Punjab 151502, India, <sup>2</sup>Assistant Librarian, Bhai Gurdas Library, Guru Nanak Dev University, Amritsar, Punjab 143005, India.

**Coressponding Author: Surinder Singh Ghuman,** Assistant Librarian, Bhai Gurdas Library, Guru Nanak Dev University, Amritsar, Punjab 143005, India.

E-mail: ghumanbgl\_gndu@rediffmail.com

Received on: 28.04.2023 Accepted on: 31.05.2023

news about the economic and political spheres of the country. Right information at right time strengthens the working of democracy in any country. In India first newspaper was published in 1780 by James Augustus Hicky under the name "The Bengal Gazette". During British period the press was under strict control of the government. In 1861 the first edition of "The times of India" was published. In 1868 "Amrit Bazar Patrika" was started. Newspapers played very positive role in freedom movement of India. In college students get opportunity to read number of newspapers in different languages at on place. At this age the students are to choose different professions for further studies or for employment. Newspapers provide them wide range of academic information which is very vital for the further growth of college students.

# GURU NANAK COLLEGE BUDHLADA

College is situated at Budhlada in Mansa district of Punjab, India. It was started in 1971 and is having 16 PG and 12 UG courses (including 3 skill development vocational and industry oriented courses), 151 faculty members and 4446 students. College has 2042 girl and 2404 boy students. College is affiliated to Punjabi University, Patiala. Spread over in 10.5 acre it is providing education in humanities, commerce, management, Library & Information Science, Science, Agriculture and Computer Science faculties. Besides this college is also offering various skill development and vocational courses. College has a well equipped library which is open from 9 to 4pm on all working days is subscribing to 23 newspapers daily.

### **REVIEW OF LITERATURE**

**Nattembo and Bukirwa (2023)** conducted study of reading habit of students of Uganda college of commerce, Tororo and found that majority of students (62.9%) read newspaper to get their information. Regarding the use of format 46.3% of the students prefer print format of the newspaper followed by both print and digital format (37.1%) and only digital format (16.6%).

Kumar et al. (2021) undertook study on the newspaper reading habits of veterinary students of college of veterinary and animal science Navania, Udaipur and found that majority of the students (62.22%) prefer English newspaper followed by Hindi (37.78%). Study found that 81.11% of the students read newspaper in library. 68.89% read newspaper less than 30 minutes in a day. The Hindu is most popular newspaper among students followed by the times of India, employment news and Rajasthan Patrika. Majority of the respondents (38.89%) read newspaper to improve general knowledge and 30% to know employment advertisement. Timely newspaper are not available, few copies of newspaper and interruption of electricity are major problems faced by the students to read newspaper.

**Tilak and Bhaumik (2021)** carried a study of reading habits of college students belonging to Pune University to understand about college students' reading behavior, to find out preferred type newspaper content and to understand the benefits of newspaper reading on college students. The researcher evaluates already done studies on reading habit and observed that information in newspaper supports overall development of the students. Newspapers widen their approach and they use various online platforms and they read daily. Students also read newspaper to relax, obtain research information and to complete their assignments and projects.

Kothainayagi and Karthikeyan (2019) did a study on the newspaper reading behavior among the college students and find that maximum students prefer to read in English language and print format. 70% of the respondents prefer The Hindu, 13.3% Dinamalar and 8.33% Thinathanthi newspapers. 76.6% daily spent 0 to 30 minutes per day reading newspaper. Large number of students (75%) subscribes newspaper. Current affairs and sports are choice of topics for students and 35% daily read newspaper. Maximum students (75%) read for social awareness followed by entertainment (10%) and 4% each for job and examination. For 48.3% it was parents who motivated to read newspaper and for other 23.3% it was friends who motivated.

**Patel (2018)** conducted a study of Newspaper reading habit among the students of dental college visanagar to know the time, purpose, areas of interest and media preferred by the students. Most of the students regularly read newspaper for less than 30 minutes in a day in the college library. Students prefer Gujarati language for reading and for English they prefer The Times of India. Motivated by parents they prefer educational and sports related news to update their general knowledge. Majority of the students prefer print form and lack of time hinders their newspaper reading habit. Gujarat Samachar and Sandesh are most preferred paper in Gujarati.

Balasubramanian et al. (2014) carried study on newspaper reading habit of G.V.N. College, Kovipatti, Tamilnadu and found that majority of the students (69.52%) has the habit of reading newspaper. Tamil is the most preferred language followed by English for reading newspaper. 58.10% spent less than one hour daily reading newspaper where as 26.67% spend 1to 2 hours and 15.24% 2 to 3 hours. Majority of the respondents (36.19%) prefer Daily Thanthi followed by Dinamalar (21.90%), Dinakaran (12.38%), The Hindu (11.43%), Dinamani (10.48%) and Indian Express (7.62%). 30.48% students prefer sensational news, followed by sports (18.10%) and politics (13.33%). Most of the students (40%) read for general knowledge, 25.71% for education and 20% read for employment.

#### **OBJECTIVES OF THE STUDY**

Gender 100 responses

Present study was conducted to know the reading habit of students at Guru Nanak College Budhlada with the below given objectives:

- To know the frequency of reading newspaper.
- To find the preferred newspapers in English, Hindi and Punjabi language.
- To find the purpose of reading newspaper.
- To know the preferred place, time and language of newspaper.
- To know the hindrances to the reading of newspaper.

• To find the criterion for choosing a newspaper and its format for reading.

## **RESEARCH METHODOLOGY**

The required data for the study was collected through questionnaire method. A structured questionnaire was developed with various questions based on the objectives of the study. Google form was prepared and online distributed to the one hundred student of the college. The received data was analyzed and presented in the form of pie charts and graphs.

### DATA ANALYSIS AND INTERPRETATION



Fig. 1: Gender wise distribution



Fig. 2: Age wise distribution

# Inderjeet Singh Maan, Surinder Singh Ghuman. Newspaper reading habit of college students: A study of Guru Nanak College Budhlada





Newspaper reading frequency.

100 responses





### How many newspapers you read in a day? 100 responses



Fig. 5: Newspaper reading per day

Indian Journal of Library and Information Science / Volume 18 Number 1 / January-April 2024

Daily time spent on reading a Newspaper 100 responses



Fig. 6: Daily time spent on reading a newspaper

### Preferred newspaper format

100 responses



Fig. 7: Preferred newspaper format



# Preferred language for reading newspaper (You can tick more than one option) 100 responses

Fig. 8: Preferred language for reading newspaper

Most preferred newspaper in Punjabi language (you can tick more than one choice) 100 responses



Fig. 9: Preferred newspaper in Punjabi language

Most preferred newspaper in English language (you can tick more than one choice) 100 responses



Fig. 10: Preferred newspaper in English language

### Most preferred newspaper in Hindi language (you can tick more than one choice) 100 responses



Fig. 11: Preferred newspaper in Hindi language

# Purpose for reading newspaper. (you can tick more than one choice) 100 responses





Your favorite content/section in the newspaper (you can tick more than one choice) 100 responses



Fig. 13: Favorite section/content in newspaper



Fig. 14: Place of reading newspaper

Criterion for Choosing a newspaper

100 responses



Fig. 15: Criterion for choosing a newspaper

When do you read Newspaper?

100 responses



Fig. 16: When do you read newspaper

### Who inculcated your newspaper reading habit? 100 responses





Hindrances to newspaper reading habit.

100 responses



Fig. 18: Hindrances to newspaper reading

# FINDINGS

1. Most of the students read newspaper daily and spend 0 to 15 minutes daily reading newspaper.

2. Large number of students prefers hard copy of newspaper for reading.

3. Punjabi is most preferred language for reading followed by English and Hindi.

4. Ajit followed by Punjabi Tribune and Jag Bani are preferred newspaper in Punjabi language.

5. The Tribune followed by The Times of India and the Hindu are favorite newspaper in English language.

6. Dainik Jagran followed by Ajit Samachar and Dainik Tribune are favorite in Hindi language.

7. Most of the students read newspaper for current affairs followed by to be aware of social, political and economic issues and for job information.

8. In case of favorite content/section students like education, jobs and carrier and health.

9. Students prefer to read newspaper at home followed by department library and college library.

10. Availability is first criteria for choosing a newspaper followed by content and language.

11. Most of the students read in morning and they are self-motivated for reading newspaper.

12. Availability of news on other media, busy schedule and shortage of time are major hindrances for college students to read newspaper.

# CONCLUSION

Although the college is situated in rural area yet most of the students in the college daily read newspaper. They mostly read during morning time and prefer hard copy of the newspaper. Students read to know about the current affairs and to be socially, economically and politically aware. While choosing a newspaper to read they see the availability, content and language. Ajit, Punjabi Tribune, The Tribune, Times of India, Dainik Jagran and Ajit Samachar are the preferred newspaper of the college students. College library also subscribe to large number of newspapers for the students. Newspaper is an important academic source for the students who are self-motivated to read. In the present scenario the current news is available on various media but still the students read newspaper in the college for pursuing their academic goals.

# REFERENCES

- 1. Nattembo, Susan and Bukirwa, Joyce, "Reading habits of students in the digital era: A case of Uganda College of Commerce, Tororo" (2023). Library Philosophy and Practice (e-journal). 7980. https://digitalcommons.unl.edu/libphilprac/7980. Accessed on March 02,2024.
- Kumar, R., Goyal, T.C., Bumra, H., Rajoria, R & Rajoria, S. (2021). Newspaper reading habits of veterinary students of college of veterinary and animal science Navania, Udaipur. The Pharma Innovation, SP-10(2), 198-201.

Inderjeet Singh Maan, Surinder Singh Ghuman. Newspaper reading habit of college students: A study of Guru Nanak College Budhlada

- 3. Kothainayagi, T.N. and Karthikeyan, C. (2019). Newspaper reading behavior among college students. Research Explorer, 5 (22), 44-49.
- Balasubramanian, P., Bala, S. and Marichamy, A. (2014). A study on newspaper reading habit of G.V.N. College, Kovipatti, Tamilnadu. Indian Journal of Information Sources and Services, 4(1), 9-12.
- 5. Patel, R.,(2018). Newspaper reading habits among the students of dental college,Visnagar: a survey. International Journal of Research in humanities & Soc. Sciences, 5(9), 19-25.
- 6. www.gncbuhlada.org/about/about-college. Accessd on March 11,2024.



# **Guidelines for Authors**

Manuscripts must be prepared in accordance with "Uniform requirements for Manuscripts submitted to Biomedical Journal" developed by international committee of medical Journal Editors

#### Types of Manuscripts and Limits

Original articles: Up to 3000 words excluding references and abstract and up to 10 references.

Review articles: Up to 2500 words excluding references and abstract and up to 10 references.

Case reports: Up to 1000 words excluding references and abstract and up to 10 references.

#### **Online Submission of the Manuscripts**

Articles can also be submitted online from http:// rfppl.co.in/customer\_index.php.

I) First Page File: Prepare the title page, covering letter, acknowledgement, etc. using a word processor program. All information which can reveal your identity should be here. use text/rtf/doc/PDF files. Do not zip the files.

2) Article file: The main text of the article, beginning from Abstract till References (including tables) should be in this file. Do not include any information (such as acknowledgement, your name in page headers, etc.) in this file. Use text/rtf/doc/PDF files. Do not zip the files. Limit the file size to 400 Kb. Do not incorporate images in the file. If file size is large, graphs can be submitted as images separately without incorporating them in the article file to reduce the size of the file.

3) Images: Submit good quality color images. Each image should be less than 100 Kb in size. Size of the image can be reduced by decreasing the actual height and width of the images (keep up to 400 pixels or 3 inches). All image formats (jpeg, tiff, gif, bmp, png, eps etc.) are acceptable; jpeg is most suitable.

Legends: Legends for the Fig.s/images should be included at the end of the article file.

If the manuscript is submitted online, the contributors' form and copyright transfer form has to be submitted in original with the signatures of all the contributors within two weeks from submission. Hard copies of the images (3 sets), for articles submitted online, should be sent to the journal office at the time of submission of a revised manuscript. Editorial office: Red Flower Publication Pvt. Ltd., 48/41-42, DSIDC, Pocket-II, Mayur Vihar Phase-I, Delhi – 110 091, India, Phone: 91-11-79695648, Cell: +91-9821671871. E-mail: author@rfppl.co.in. Submission page: http://rfppl. co.in/article\_submission\_system.php?mid=5.

#### Preparation of the Manuscript

The text of observational and experimental articles should be divided into sections with the headings: Introduction, Methods, Results, Discussion, References, Tables, Fig.s, Fig. legends, and Acknowledgment. Do not make subheadings in these sections.

#### Title Page

The title page should carry

- 1) Type of manuscript (e.g. Original article, Review article, Case Report)
- 2) The title of the article, should be concise and informative;
- 3) Running title or short title not more than 50 characters;
- 4) The name by which each contributor is known (Last name, First name and initials of middle name), with his or her highest academic degree(s) and institutional affiliation;
- 5) The name of the department(s) and institution(s) to which the work should be attributed;
- 6) The name, address, phone numbers, facsimile numbers and e-mail address of the contributor responsible for correspondence about the manuscript; should be mentoined.
- The total number of pages, total number of photographs and word counts separately for abstract and for the text (excluding the references and abstract);
- 8) Source(s) of support in the form of grants, equipment, drugs, or all of these;
- 9) Acknowledgement, if any; and
- 10) If the manuscript was presented as part at a meeting, the organization, place, and exact date on which it was read.

#### **Abstract Page**

The second page should carry the full title of the manuscript and an abstract (of no more than 150 words for case reports, brief reports and 250 words for original articles). The abstract should be structured and state the Context (Background), Aims, Settings and Design, Methods and Materials, Statistical analysis used, Results and Conclusions. Below the abstract should provide 3 to 10 keywords.

#### Introduction

State the background of the study and purpose of the study and summarize the rationale for the study or observation.

#### Methods

The methods section should include only information that was available at the time the plan or protocol for the study was written such as study approach, design, type of sample, sample size, sampling technique, setting of the study, description of data collection tools and methods; all information obtained during the conduct of the study belongs in the Results section.

Reports of randomized clinical trials should be based on the CONSORT Statement (http:// www. consort-statement. org). When reporting experiments on human subjects, indicate whether the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional or regional) and with the Helsinki Declaration of 1975, as revised in 2000 (available at http://www.wma. net/e/policy/17-c\_e.html).

#### Results

Present your results in logical sequence in the text, tables, and illustrations, giving the main or most important findings first. Do not repeat in the text all the data in the tables or illustrations; emphasize or summarize only important observations. Extra or supplementary materials and technical details can be placed in an appendix where it will be accessible but will not interrupt the flow of the text; alternatively, it can be published only in the electronic version of the journal.

#### Discussion

Include summary of key findings (primary outcome measures, secondary outcome measures, results as they relate to a prior hypothesis); Strengths and limitations of the study (study question, study design, data collection, analysis and interpretation); Interpretation and implications in the context of the totality of evidence (is there a systematic review to refer to, if not, could one be reasonably done here and now?, What this study adds to the available evidence, effects on patient care and health policy, possible mechanisms)? Controversies raised by this study; and Future research directions (for this particular research collaboration, underlying mechanisms, clinical research). Do not repeat in detail data or other material given in the Introduction or the Results section.

#### References

List references in alphabetical order. Each listed reference should be cited in text (not in alphabetic order), and each text citation should be listed in the References section. Identify references in text, tables, and legends by Arabic numerals in square bracket (e.g. [10]). Please refer to ICMJE Guidelines (http://www.nlm.nih.gov/bsd/uniform\_requirements.html) for more examples.

#### Standard journal article

[1] Flink H, Tegelberg Å, Thörn M, Lagerlöf F. Effect of oral iron supplementation on unstimulated salivary flow rate: A randomized, double-blind, placebo-controlled trial. J Oral Pathol Med 2006; 35: 540-7.

[2] Twetman S, Axelsson S, Dahlgren H, Holm AK, Källestål C, Lagerlöf F, et al. Caries-preventive effect of fluoride toothpaste: A systematic review. Acta Odontol Scand 2003; 61: 347-55.

#### Article in supplement or special issue

[3] Fleischer W, Reimer K. Povidone iodine antisepsis. State of the art. Dermatology 1997; 195 Suppl 2: 3-9.

#### Corporate (collective) author

[4] American Academy of Periodontology. Sonic and ultrasonic scalers in periodontics. J Periodontol 2000; 71: 1792-801.

#### **Unpublished article**

[5] Garoushi S, Lassila LV, Tezvergil A, Vallittu PK. Static and fatigue compression test for particulate filler composite resin with fiberreinforced composite substructure. Dent Mater 2006.

#### Personal author(s)

[6] Hosmer D, Lemeshow S. Applied logistic regression, 2nd edn. New York: Wiley-Interscience; 2000.

#### Chapter in book

[7] Nauntofte B, Tenovuo J, Lagerlöf F. Secretion and composition of saliva. In: Fejerskov O,

Kidd EAM, editors. Dental caries: The disease and its clinical management. Oxford: Blackwell Munksgaard; 2003. p. 7-27.

#### No author given

[8] World Health Organization. Oral health surveys - basic methods, 4th edn. Geneva: World Health Organization; 1997.

#### Reference from electronic media

[9] National Statistics Online – Trends in suicide by method in England and Wales, 1979-2001. www. statistics.gov.uk/downloads/theme\_health/HSQ 20.pdf (accessed Jan 24, 2005): 7-18. Only verified references against the original documents should be cited. Authors are responsible for the accuracy and completeness of their references and for correct text citation. The number of reference should be kept limited to 20 in case of major communications and 10 for short communications.

More information about other reference types is available at www.nlm.nih.gov/bsd/uniform\_ requirements.html, but observes some minor deviations (no full stop after journal title, no issue or date after volume, etc).

#### Tables

Tables should be self-explanatory and should not duplicate textual material.

Tables with more than 10 columns and 25 rows are not acceptable.

Table numbers should be in Arabic numerals, consecutively in the order of their first citation in the text and supply a brief title for each.

Explain in footnotes all non-standard abbreviations that are used in each table.

For footnotes use the following symbols, in this sequence: \*,  $\P$ , †, ‡‡,

### **Illustrations (Fig.s)**

Graphics files are welcome if supplied as Tiff, EPS, or PowerPoint files of minimum 1200x1600 pixel size. The minimum line weight for line art is 0.5 point for optimal printing.

When possible, please place symbol legends below the Fig. instead of to the side.

Original color Fig.s can be printed in color at the editor's and publisher's discretion provided the author agrees to pay.

Type or print out legends (maximum 40 words, excluding the credit line) for illustrations using double spacing, with Arabic numerals corresponding to the illustrations.

#### Sending a revised manuscript

While submitting a revised manuscript, contributors are requested to include, along with single copy of the final revised manuscript, a photocopy of the revised manuscript with the changes underlined in red and copy of the comments with the point to point clarification to each comment. The manuscript number should be written on each of these documents. If the manuscript is submitted online, the contributors' form and copyright transfer form has to be submitted in original with the signatures of all the contributors within two weeks of submission. Hard copies of images should be sent to the office of the journal. There is no need to send printed manuscript for articles submitted online.

#### Reprints

Journal provides no free printed reprints, however a author copy is sent to the main author and additional copies are available on payment (ask to the journal office).

### Copyrights

The whole of the literary matter in the journal is copyright and cannot be reproduced without the written permission.

### Declaration

A declaration should be submitted stating that the manuscript represents valid work and that neither this manuscript nor one with substantially similar content under the present authorship has been published or is being considered for publication elsewhere and the authorship of this article will not be contested by any one whose name (s) is/are not listed here, and that the order of authorship as placed in the manuscript is final and accepted by the co-authors. Declarations should be signed by all the authors in the order in which they are mentioned in the original manuscript. Matters appearing in the Journal are covered by copyright but no objection will be made to their reproduction provided permission is obtained from the Editor prior to publication and due acknowledgment of the source is made.

## **Approval of Ethics Committee**

We need the Ethics committee approval letter from an Institutional ethical committee (IEC) or an institutional review board (IRB) to publish your Research article or author should submit a statement that the study does not require ethics approval along with evidence. The evidence could either be consent from patients is available and there are no ethics issues in the paper or a letter from an IRB stating that the study in question does not require ethics approval.

## Abbreviations

Standard abbreviations should be used and be spelt out when first used in the text. Abbreviations should not be used in the title or abstract.

## Checklist

- Manuscript Title
- Covering letter: Signed by all contributors
- Previous publication/ presentations mentioned, Source of funding mentioned

• Conflicts of interest disclosed

### Authors

- Middle name initials provided.
- Author for correspondence, with e-mail address provided.
- Number of contributors restricted as per the instructions.
- Identity not revealed in paper except title page (e.g.name of the institute in Methods, citing previous study as 'our study')

# Presentation and Format

- Double spacing
- Margins 2.5 cm from all four sides

• Title page contains all the desired information. Running title provided (not more than 50 characters)

• Abstract page contains the full title of the manuscript

• Abstract provided: Structured abstract provided for an original article.

- Key words provided (three or more)
- Introduction of 75-100 words
- Headings in title case (not ALL CAPITALS).

References cited in square brackets

• References according to the journal's instructions

### Language and grammar

Uniformly American English

• Abbreviations spelt out in full for the first time. Numerals from 1 to 10 spelt out

• Numerals at the beginning of the sentence spelt out

## **Tables and Fig.s**

• No repetition of data in tables and graphs and in text.

• Actual numbers from which graphs drawn, provided.

- Fig.s necessary and of good quality (color)
- Table and Fig. numbers in Arabic letters (not Roman).

• Labels pasted on back of the photographs (no names written)

• Fig. legends provided (not more than 40 words)

• Patients' privacy maintained, (if not permission taken)

• Credit note for borrowed Fig.s/tables provided

• Manuscript provided on a CDROM (with double spacing)

### Submitting the Manuscript

• Is the journal editor's contact information current?

• Is the cover letter included with the manuscript? Does the letter:

1. Include the author's postal address, e-mail address, telephone number, and fax number for future correspondence?

2. State that the manuscript is original, not previously published, and not under concurrent consideration elsewhere?

3. Inform the journal editor of the existence of any similar published manuscripts written by the author?

4. Mention any supplemental material you are submitting for the online version of your article. Contributors' Form (to be modified as applicable and one signed copy attached with the manuscript)

100